THE UNITED STATES SPACE FORCE: NOT IF, BUT WHEN

BY

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The undersigned certify that this thesis meets master's-level standards of research, argumentation, and expression.

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Colonel M. V. "Coyote" Smith, PhD 10 June 2016

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About the Author

Lieutenant Colonel Norsky was born and raised in Corning, New York. He entered the Air Force in 2002 after receiving a commission through the Reserve Officer Training Corps program from the Virginia Tech Corps of Cadets in Blacksburg, Virginia. He has served in a variety of positions at the squadron and group levels in missile warning operations, training, evaluation, operational testing, and weapons and tactics. He has also served with Combined Joint Task Force One as a Space Liaison in Afghanistan, providing space effects to more than 30,000 combat troops in theater. Lieutenant Colonel Norsky has completed several formal education programs during his career in the Air Force including a Masters of Science in Operations Research at the Air Force Institute of Technology, a Masters of Science in Space Studies from American Military University and a Masters of Public Policy from Princeton University through the Chief of Staff of the Air Force Scholar Program. Following graduation from the School of Advanced Air and Space Studies, he will assume command of the 2d Space Operations Squadron at Schriever Air Force Base, Colorado, where he will lead the space professionals entrusted in operating and maintaining the Global Positioning System for the nation.

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Abstract

This study explores the historical context behind the genesis of the United States Air Force in an attempt to understand what contextual factors must be present in order for the nation to consider establishing an independent Space Force. The thesis acknowledges the seemingly inevitability of a new branch of service, partially driven by our military reliance on space capabilities but also because of the way that space is slowly being woven into the fabric of our society. This academic work pays homage to the United States Air Force for the exceptional role it has played in developing our space capabilities. This study contends that the United States Air Force has been and will continue to be the most appropriate service to develop our space capability. In comparing the contextual elements that surrounded the creation of the Air Force, the paper is able to extrapolate what the necessary and sufficient conditions are in order to enable the creation of an independent Space Force. While these military, social, economic, and political conditions are not yet present in their entirety, the thesis contends that one day in the near future they will be, opening up the possibility for a national debate that will pave the way to an independent United States Space Force.

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Introduction

No organization in the United States Government has been a more effective and more appropriate proponent of space capabilities than the United States Air Force (USAF). From robust financing to vast efforts integrating space capabilities into routine operations, the USAF has ensured that the United States is the premier spacefaring nation on the planet. Since the launch of Sputnik by the Soviet Union, several things were made abundantly clear to the US. First, space-based payloads enjoy freedom of maneuver and overflight that is not possible with air-breathing assets. Second, space is a new high ground that is emblematic of a nation's military and scientific prowess. Third, it is clear that the space race is a worldwide competition, one in which the US will have to progress constantly or risk military and economic loss.

If the US is to remain the premier spacefaring nation on the planet, it must continue to advance its space capabilities and its military exploitation of space. One need only to look at history to see a similar moment, as people took to the skies in heavier-than-air vehicles and eventually incorporated them into every facet of life be it commercial, scientific, or military. The rise of the USAF from the US Army Air Corps not only resulted from technological developments, but also from many contextual conditions that made the situation ripe for the birth of a new branch of service within the Department of Defense (DoD). Thus, to deny the inevitability of an independent Space Force would be to deny the same logic and rationale that gave rise to an independent Air Force nearly 70 years ago. The question of when, not if, an independent Space Force is needed should be answered not through an indictment on the USAF. Instead, what is needed is a contextual analysis that identifies under what conditions it would be a rational evolution in our spacefaring journey to make such a shift in the construct of our armed forces.

This thesis examines the inevitability of an independent Space Force through several mechanisms. The methodology of the thesis includes an analysis of the historical context surrounding the genesis of the USAF and applies it through an analogous framework to the rise of our nation as spacefaring leader. In this comparison, the thesis identifies what contextual elements are needed to give rise to the decision to establish an independent organization. To accomplish this, the analysis is broken down into several sequential tasks. First, a comparison is made with the historical movement for an independent Air Force in the first half of the 20th century. This comparison draws on historical literature focused primarily on the period of time between the first and second world wars. The interwar period is of interest because of the vast developments that took place in the aircraft industry and the expanded differentiation between the roles of aircraft between World War I and World War II.

The historical examination also looks beyond the military capabilities brought to fruition during the wars and analyzes the economic importance of exploiting this new operating environment. This study makes some comparisons between the economic importance of the airplane and our need to protect a new line of communication, given the rise of space-based sources of revenue and the need to protect them. Naturally, there is much more to the rise of an independent branch of service than capability development and the fulfillment of an economic niche. This thesis examines other environmental conditions that set the scene for an independent United States Air Force. This examination enables a comparative-focused approach to addressing the question of "when" the US should have an independent Space Force.

Having completed the historical analysis of the rise of the USAF in Chapter One, calls for an independent Space Force are analyzed in Chapter Two. Previous scholarly attempts to persuade decision makers for an independent branch of service for space have ranged in style from

either attacking the role that the USAF has played in fostering space capability advancements or analyzing specific decision makers and the role they played in preventing a new independent service. Understanding previous efforts to advocate for a new branch of service is essential to this study because they provide evidence of the failed movements or flawed logic that were unable to make that happen.

This study takes an entirely different approach from previous arguments, which often take the form of indictments against the USAF and its leadership. Instead, this study contends that the USAF and its leadership have done an exemplary job in fostering the spacefaring status of the US and focuses on the contextual conditions that must be satisfied before the debate for a new branch of service should take place. Chapter Three is devoted to describing the various contextual conditions that must be satisfied prior to the establishment of an independent Space Force. Thus, this study has explanatory power regarding why previous efforts fell short of convincing the US to move towards an independent branch of service and some prescriptive power as to when the conditions will be ripe to make such a move.

These preconditions form the core of the argument in this thesis. Thus, it is necessary to examine a wide range of contextual factors that gave rise to an independent USAF in order to translate them into possible preconditions for an independent Space Force. The USAF is used as the base of this examination for two reasons. First, it is most appropriate and applicable to use the USAF because that is the current residence for the preponderance of the US space arsenal. Second, on a temporal scale, it is more feasible to research the contextual conditions present in the first half of the 20th century than it would be to examine those at the latter half of the 18th century when the US Army or US Navy came into existence.

The contextual conditions that will be studied include, but are not limited to the following topics. First, the study examines the importance of the military capabilities that contributed to the nation's defense, ranging from the decisive offensive capability of strategic bombing to the importance of Air Transport Command and its impact on supplying troops fighting in Europe. Commercially, Americans relied increasingly on airplanes to transport their goods faster and farther than land or sea would enable. This increased reliance on commercial air transport precipitated a need for a branch of service dedicated to protecting that line of communication. This study examines how the vast economic impact of the air industry required protection in the air, a niche that the USAF filled in a way that was not expected of the US Army. In other words, as America expanded its economic interests into the new domain of air and as its economy gradually began to depend upon the air for its survival, the requirements to protect that domain outgrew the expectations and capacity of the US Army. Finally, this study examines the need for a universally accepted set of international laws or norms applicable to either wartime or peacetime operations. If similar international instruments existed for airpower prior to the rise of the USAF, this study will consider whether these are needed prior to establishing an independent Space Force and what some of these laws or norms may need to address.

Having defined the preconditions necessary for the rise of an independent Space Force, Chapter Four will address what forms this new service may take. It is not sufficient to assume that a new Space Force will be a separate branch within the DoD. Perhaps it may, but there are certainly other options. This thesis examines the possibility of a Space Corps, contained within the USAF, but with greater autonomy. As an analogy to the Marine Corps within the US Navy, this option has some inherent benefits and drawbacks. There also exists the possibility that a new Space Force will not be a "force" at all and could be a department in

the US Government, one that encompasses finance and economics, security, law, and more. While the notion of a Department of Space sounds like a more robust undertaking than a branch of service within the DoD, it may be required given the importance of space capabilities to the US. Finally, this thesis examines the possibility of a Space Guard. This is similar in concept to the US Coast Guard as an autonomous branch, perhaps residing in the Department of Homeland Security, that performs space-related duties under multiple titles of the United States Code.

The methodology of this literary work is not without its limitations. First, a stronger analysis would include more cases with respect to the rise of an independent branch of service. Including the contextual preconditions present at the rise of the United States Army or Navy would perhaps offer even more insight into what factors give rise to the decision to establish a new branch of service in the United States. However, the change in the international construct is drastically different than in the time of inception of the United States Army or Navy and the technology present at the inception of each was vastly different than it is today. One final consideration regarding the methodology is that there are limited examples of a nation establishing an independent Space Force with which to compare. China's new branch of the People's Liberation Army, the Space Support Forces, is one such example but was only established on 31 December 2015 and little open-source material is available regarding the reasons behind its genesis and specific functions.[1] Many share a similar construct as the United States, having a space command contained within a larger branch of their armed forces. One such example is the newly formed Russia Aerospace Forces which is an amalgamation of their Air Force and Aerospace Defense Forces. This branch of service was

[1] Fischer, Richard D. 2016. *IHS Jane's 360: China establishes new Rocket Force, Strategic Support Force.* January 3. Accessed February 25, 2016. http://www.janes.com/article/56974/china-establishes-new-rocket-force-strategic-support-force.

created on 1 August 2015 and consists of three sub-branches called the air force, air and missile defense missile troops, and the space forces.[2]

The thesis provides in the concluding chapter, a consolidated list of contextual preconditions that, once met, could determine the decision to establish an independent Space Force. It will also recommend a construct that would be most appropriate given the preconditions that should be met and the timeline within which they may be met. While each of the items addressed in the conclusion could serve as the basis for future research efforts, this thesis will have contributed to the Space Force debate in a new way that neither indicts the role played by the USAF and its leadership nor makes infeasible demands on today's system. This thesis provides an objective analysis on environmental conditions that is divorced from personal opinions for or against the USAF but remains married to the logic that has guided our DoD organization leading up to and including the birth of the USAF itself.

As the scope of this work is to identify the contextual elements that would make the situation ripe for a new branch of service, the intended audience includes space professionals, leadership within Air Force Space Command, the Air Force, and the Department of Defense. It draws from a number of sources with some of the most crucial being *The Rise of American Air Power* by Michael S. Sherry, *Winged Defense* by Colonel William "Billy" Mitchell, *Rise of the Fighter Generals* by Major General Michael Worden, and *Mastering the Ultimate High Ground* by Benjamin S. Lambeth.

Michael Sherry's book sheds light on many of the endogenous and exogenous variables that shaped the formation of an independent Air Force. Many of these exogenous, contextual elements can, and are applied

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[2] de Larrinaga, Nicholas. 2015. *IHS Jane's 360: Russia creates new Aerospace Force service branch.* August 4. Accessed February 25, 2016. http://www.janes.com/article/53416/russia-creates-new-aerospace-force-service-branch.

in this study to analogous conditions that may be necessary for the formulation of an independent Space Force. No study on the rise of an independent branch of service would be complete without the works of Billy Mitchell. His advocacy for an independent air arm spoke to a society that was beginning to realize the potential of the newly occupied domain. While assessments of his advocacy approach vary from adulation to disdain, his ability to rouse public support for an independent Air Force may have contributed to a critical contextual element necessary for the United States to establish the new branch of service less than two decades later. Michael Worden's work sought to explain the change in culture from bombers to fighters in the top echelons of the service but his work also illustrates the way in which Army Air Force leaders united in order to advocate for an independent Air Force when the timing was ripe. Finally, Benjamin Lambeth's work confirms the decisiveness of the air arm in World War II as a required precondition for an independent branch of service. The value of this observation comes from a book written more than 50 years later and through the lens of someone examining the impact and potential of America's space capabilities. Each of these works changed the paradigm through which we have viewed the projection of air power and what that may translate to our implementation of national spacepower.

This study also examines several current publications like the United Nations Report of the Committee on the Peaceful Uses of Outer Space and speech transcripts and interviews by the highest levels of Air Force Space Command, the United States Air Force, and the Department of Defense. Analysis of these current and topical publications provides relevant context regarding the military and political climate, the foundation for many important decisions being made about how the United States prepares itself for future endeavors in space. This thesis also builds off of the monumental works of James Clay Moltz, Carl H.

Builder, and Peter L. Hays, which have also shaped the way we conceptualize air and space power.

James Moltz provides critical analysis regarding the militarization of space and offers keen insights on the landscape of spacepower politics and what that means for the United States and its near peer competitors. Carl Builder's *Icarus Syndrome* offers astute analysis on the identity crisis faced by the Air Force before its 50th birthday and in doing so, confirms much about its decisiveness during World War II and its initial reasons for existence as an independent branch of the military. Finally, Peter Hays' *Space and Security* provides in-depth analysis on the role that the United States Government has played in shaping the economic exploits of space and offers prescient recommendations on how it should balance the often diametrically opposed notions of commercial profit and national security. Clearly, each of these works, as well as many others, have contributed to the analysis contained in this thesis and have shaped and influenced the conclusions contained within.

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Chapter 1

Raising an Independent Service

This chapter is comprised of several sections, each illustrating some critical contextual elements that gave rise to the decision to establish an independent Air Force. The first of these is the decisiveness of airpower during World War II. This study argues that it was this decisiveness that proved to America and its democratically elected politicians and military leaders alike, that air power proved its worth during combat and now bore a responsibility in our national defense that was equal to the Army and Navy.[1]

The second section of this chapter argues that passenger air travel, cargo transit, and military transportation became such an integral part of the American way of life that they must be protected by an air arm that was commensurate with their importance in both the military and civilian sectors. The third section of this chapter highlights the economic impact of the air industry, particularly in the interwar period. This economic impact also became such an enormous component of the United States economy that protection from and investment in a military air arm was a forgone conclusion. Finally, this chapter addresses the establishment of international aviation laws and norms prior to the establishment of the United States Air Force. While these efforts were not concretely related to one another, this study argues that the establishment of international laws and norms was a contextual enabler for the genesis of the United States Air Force.

[1] Lambeth, Benjamin S. 2003. *Mastering the Ultimate High Ground.* Arlington: RAND Project AIR FORCE, p. 73

Decisiveness of Airpower During World War II

One of the primary drivers for the establishment of an independent Air Force was its decisive effects during World War II. This is not to say that airpower was the only decisive effect during the war, but was one of the decisive factors that contributed to the Allies' victory. This notion is evident in the words of General Henry H. "Hap" Arnold:

> It is no longer necessary for the airman to claim that he can win wars alone. His arm has reached an acknowledged importance and a recognized value and size so that there is no longer need for hyperbole in describing its vital role. The simple facts now coming from the world's battlefields speak more loudly of the power of air forces than the strongest language the earlier prophets were able to paint by epithet or eulogy.[2]

Prior to the Allies' victory in World War II, during the First World War, airpower was seen as an enabler for the ground forces, being called "the eyes of the army" with reconnaissance as its "central purpose."[3] For many, the reason behind this is a myopic view taken by the war planners prior to the United States entering the war. "Soon this country was at war—with no plan or program for the use of airpower in its general staff, with no airplane factories, and with its only aviation companies in the hands of bankers and automobile men of no aeronautical experience whatsoever."[4]

This somewhat limited role of airpower, implemented initially by the British and the Germans in World War I, eventually evolved to more active, offensive means fueled by a mutual desire for all nations to rise above the

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[2] Builder, Carl H. 1994. *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force.* New Brunswick: Transaction Publishers, p.102.
[3] Kennett, Lee. 1991. *The First Air War, 1914-1918.* New York: Simon & Schuster, Inc., p. 40.
[4] Kelly Jr., Charles J. 1963. *The Sky's the Limit: The History of the Airlines.* New York: Van Rees Press, p. 25.

carnage of trench warfare. Ultimately, by 1918, the offensive bombing role of the airplane was embraced by the British and American leadership but the war ended before either could "appreciate fully its potential and limitations."[5] It was not until World War II that airpower was seen as a decisive offensive weapon that provided a capability previously inconceivable though the land or sea domains. It was not just the bombing role of the air arm that proved its worth during World War II. On writing of the achievements of the Air Transport Command during World War II, authors claim that the "war changed all that had gone before…transportation was the key…time was of the essence, and the airplane was the only answer."[6] The United States had enjoyed a century-and-a-half geographically isolated from the rest of the world, but the airplane had changed that. Now, the vast expanse of the oceans seemed smaller and the need to project our national power and protect our national interests was a role that could not only be accomplished via land and sea.

Prior to World War II, legislative efforts were divided between the Lampert Committee which sought to allow more autonomy for the air arm of the United States Army and the "old order" of the Morrow Board which resisted such efforts.[7] It was not until after World War II had ended that the President of the United States, Harry Truman, "took a stand in favor of an independent military air arm," the first such stand by the Commander-in-Chief in United States aviation history.[8] This stance was supported across the political isles in both houses of Congress and by the American people that elected them. "The US Army Air Forces bought its

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[5] Sherry, Michael S. 1987. *The Rise of American Air Power: The Creation of Armageddon.* New Haven: Yale University Press, p. 21.
[6] Kelly Jr., Charles J. 1963. *The Sky's the Limit: The History of the Airlines.* New York: Van Rees Press, p. 143.
[7] McClendon, R. Earl. 1954. *Autonomy of the Air Arm.* Maxwell AFB: Air University, p. 56.
[8] McClendon, *Autonomy of the Air Arm*, p.108.

right to full autonomy with the blood of its members. Because of their sacrifice, which did so much to end World War II, opposition to a separate Air Force evaporated."[9]

In the period immediately following World War II, the Army Air Forces faced, as the rest of the DoD, a drastically reduced budget. Establishing an entirely new branch of service would seem far more difficult given the fiscal landscape in the aftermath of the Second World War. However, it was the decisiveness of the strategic bombers that would mobilize the Army Air Forces and unite them in their calls for autonomy.[10] Internal rivalry between the bomber generals and the fighter generals had to be pushed aside in order for the Army Air Forces to form a united front in their quest for their own military branch.[11] While the internal rivalry would later become an issue for the Air Force to resolve on its own time, as an independent service, the one voice with which the Army Air Forces spoke seemed to confirm that the decisive capability provided by strategic bombing during World War II was sufficient reason enough for the USAF to stand autonomously. This decisive capability was the way in which the service could protect the nation and its allies in the "most economical, cost-effective, and sensible way."[12]

Interestingly, authors with varying scholarly aims agree on the pursuit of autonomy through the focus on the unique strategic bombing capability provided. The authors vary from those who provide an historical account of airpower in World War II to those who analyzes the evolution of USAF general officers. Three examples of such authors with varying aims include *The Rise of American Air Power* by Michael S. Sherry, *The Air War: 1939-1945*, by Richard J. Overy, and *Rise of the Fighter Generals*, by R.

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[9] McClendon, *Autonomy of the Air Arm,* caption above photograph insert opposite of p.55.
[10] Worden, Michael R. 1998. *Rise of the Fighter Generals, The Problem of Air Force Leadership, 1945-1982.* Maxwell AFB: Air University Press, p. 30.
[11] Worden, *Rise of the Fighter Generals,* p. 27-29.
[12] Worden, *Rise of the Fighter Generals,* p. 28.

Michael Worden. Sherry's book discusses the rise of the USAF in part, because of the capability provided by strategic bombing during World War II, but uses this as a cautionary tale about the use of nuclear weapons. Overy's book is an historical account of air power during World War II on all sides of the fight. This book dispels some of the myths about the true efficacy of city bombing but, nonetheless, describes the distinct role that strategic bombing played in both the war and the establishment of an independent Air Force in the United States. Worden's book focuses on the importance of strategic bombing as a unique capability that the Air Force could solely provide for the United States, leading to decades of "bomber generals" running the USAF, followed by a rise of "fighter generals" as the role of the USAF evolved and matured.

Some argue the belief that on strategic bombing would serve as a rationale for establishing an independent service led to unrealistic promises made by the Army Air Forces. This, in turn, led to questions about the true efficacy of strategic bombing during World War II. "However, there is no question that the USAAF dedication to strategic bombing stemmed from a commitment to organizational independence. This commitment led it (and the RAF) to promise huge gains from a combined bomber offensive, gains that were not realized."[13] While the aforementioned claim has been debated by military strategists and historians alike, its author does not question the logic of creating a separate service because of its unique contributions during war. Rather, he only questions the degree of decisiveness of those contributions as criteria for independence. This author recognizes the importance of the combined bomber offensive and asserts that it was one of the decisive factors that brought victory to the Allies in World War II. This victory,

[13] Farley, Robert M. 2014. *Grounded: The Case for Abolishing the United States Air Force.* Lexington: University Press of Kentucky, p. 96.

fueled in part by airpower, shaped the contextual landscape upon which a new branch of service would be created in the United States.

Evidence for the strategic importance and tremendous responsibility that would be levied on the USAF can be found in the first-ever report published by the President's Air Policy Commission. The report explains the vital role of the USAF given the newfound sense of vulnerability that the United States felt because of the airplane.

> And the new weapons which can be delivered through the air make it vital that we protect ourselves from attack by way of this new element. An air attack could be so terrible that we must at once create the best conceivable defense against it. This means an air force in being, strong, well equipped and modern, not only capable of meeting the attack when it comes but, even more important, capable of dealing a crushing counteroffensive blow on the aggressor.[14]

Thus, through a variety of sources, all with varying scholarly purposes, it would seem as though the strategic bombing capability and the critical transcontinental shipment of troops and materiel that the Army Air Forces provided during World War II were the catalyst for a united call by its members and Congress to establish autonomy in the United States military. By 1947, many considered full autonomy as a "formal recognition to a situation which, having evolved through practical experience, really existed already in the form of the Army Air Forces."[15] Critics of the rationale for Air Force autonomy being rooted in its decisiveness during World War II would point out that, before World War II, the air arm was given tremendous latitude and was already nearly autonomous and thus, its performance during World War II really did not alter the course of Air

[14] Finletter, Thomas K. 1948. *Survival in the Air Age: A Report by the President's Air Policy Commission.* Washington D.C.: United States Government Printing Office, p. 11-12.
[15] McClendon, R. Earl. 1950. *The Question of Autonomy for the United States Air Arm, 1907-1945.* Maxwell Air Force Base: Air University Library Documentary Research Division, p. 244.

Force destiny. However, its autonomy just prior to and during World War II was largely conditional and it is only through the hindsight of the World War II victory that we are able to look back and call it a formal recognition of a forgone conclusion. It was the Air Force decisiveness during the war that made its autonomy a forgone conclusion, not the other way around.

Passenger Travel, Cargo Transit, and Military Transportation

Human utilization of the air domain for the purposes of travel, transit, and transportation occurred in the decades prior to the United States Air Force becoming its own branch of service. Contextually, this is a key driver for a separate branch of military service because it illustrates the reliance on the air for both civil and military operations. With that, the need to protect these means of travel, transit, and transportation becomes too great for a terrestrially-focused United States Army to provide. First, some definitions are needed to delineate clearly what is meant by travel, transit, and transportation. For the purposes of this thesis, air travel is meant to include all civilian movement from one place to the other through the air domain, such as commercial airlines. Transit is defined as the passage of goods or services through the air, such as commercial freight or cargo shipments. Finally, this thesis considers transportation as the passage of military forces through air, such as the transport of troops from the United States to a base overseas.

For added context, the air travel industry saw a rise that was beyond exponential during the interwar period, with the number of passengers on airlines increasing from 6,000 in 1926 to more than 400,000 in 1930, a 70-fold increase in a mere five years.[16] During the same period, transit of air mail increased from only 810,000 pounds of mail in 1926 to 8,005,000

[16] Byoir, Carl. 1931. *Graphic Facts About Aviation.* New York: Carl Byoir & Associates, p. 19.

pounds of mail in 1930 and Air Express shipped only 3,500 pounds of goods in 1926 and 718,000 pounds of goods in 1930, a staggering 200-fold increase in capacity![17] Naturally, during World War II, the transportation of troops and munitions into theater was uncontestably a decisive factor in the Allied victory in the war and was, as previously discussed, a contextual impetus for the rise of the United States Air Force in and of itself. Clearly, the rise of travel, transit, and transportation through air was a decisive contextual element in the push for a separate air arm for the United States military as the command of the skies was not limited to purely military matters and by the start of World War II, was woven into the fabric of the American way of life.

Economic Impact of the Air Industry

By the time the United States Air Force came into being, the aircraft industry had already taken off. This section discusses the impact that the meteoric rise of the air industry in the interwar period had on the establishment of the United States Air Force. Although not a direct cause, the economic boom of the air industry served as a contextual backdrop that supported the military and political leadership as they pursued independence for the Air Force.

An acknowledgement of the need to protect the economic boom of the air industry is clear in an argument made by General Lauris Norstad. In response to President Truman's request to justify the size of a 70 Group Air Force in September of 1946, General Norstad's paramount reason was "American interest in international economics."[18] The robust economic impact of the air industry as a contextual element was clearly beyond the

[17] Byoir, *Graphic Facts About Aviation*, p. 13-18.
[18] Wolk, Herman S. 1997. *The Struggle for Air Force Independence, 1943-1947.* Washington D.C.: Air Force History and Museums Programs, p.69.

control of the United States Army or the Army Air Forces but its presence was largely responsible for the justifications behind the size, scope, and composition of the proposed branch of service.

Even prior to this, it was clear that the United States Government sought to protect the fledgling aviation industry from itself through regulation of all safety standards, competitor airline entry and exit criteria, and even ticket prices. In fact, one of the few things that was not regulated was the number of flights offered and the amenities that were offered during each flight.[19] Opponents to government regulation often cited the economic restraints placed on the industry through intense regulation and called for the entire industry to be opened up as a free market. However, these regulations were necessary to establish proper safety and procedural norms and regulations. Government regulation on the industry also ensured that air transportation was available in all areas, even smaller communities that would have been otherwise ignored by the industry for a lack of profitability.[20] It was not until the domestic aviation industry was well established that a move to deregulate it occurred. Once it did, economists estimated that the industry benefitted by an estimated $2.5 billion per year. The consensus remains however, that while deregulation after 40 years of industry maturation was beneficial, a task remained for public policy to ensure that smaller, less profitable markets would not be discriminated against while still allowing for the aviation industry to maximize profits.[21] Nearly 40 years after the 1978 deregulation of the aviation industry, spacefaring nations find themselves walking the same international public policy tight rope. They are attempting to balance assured access to space for all nations, even those with less robust space-based economic industries, while maximizing the profits for the advanced

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[19] Morrison, Steven, and Clifford Winston. 1986. *The Economic Effects of Airline Deregulation.* Washington D. C.: The Brookings Institution.
[20] Morrison, *The Economic Effects of Airline Deregulation*, p.67-68.
[21] Morrison, *The Economic Effects of Airline Deregulation,* p.67-68.

nations who have already established themselves as the leading spacefaring nations of the world.

International Aviation Law

International aviation law has a complicated history that is rooted in both domestic and international agreements between air-faring nations. A fine line existed between civil and military aviation during the interwar period. A balance had to be realized between national economic interests and the desire to prevent massive rearmament. This fine line was not always clearly defined. As the history of international aviation law has shown, the blurring of this line has served to complicate the dual-use nature of aviation technology and the need for international laws and norms to regulate peacetime, and perhaps wartime, activities.

This section discusses the various domestic and international laws and norms that affected the aviation industry as it boomed during the interwar period. It illustrates the dichotomy created when a nation employs many of the same technologies for both their civilian economic interests and their ability to wage war. The compromises through international laws and norms, domestic regulations, and disarmament treaties shaped the way aviation grew during the interwar period and created a normalized industry for civilian and military affairs alike. This normalization would be one of the many contextual elements surrounding the genesis of the United States Air Force and would be a precursor to contextual elements present among spacefaring nations 80 years later.

Domestically, the Air Commerce Act of 1926 marked a turning point in the safety of the aviation industry in the United States. The framers of the Air Commerce Act sought to promote the aviation industry through safety, as a "healthy, viable air transportation industry could be of ultimate

value and service to the public."[22] The clear intent was not to stifle the air industry through bureaucratic regulation; rather, the authors of the legislation viewed this as the start of a boom and their role was to "foster the development of the industry." The proof of its efficacy is in the sharp decline of accidents. In a two-year period after the full scale of the laws were in effect, the number of fatalities per 100 million miles flown was cut in half.[23] Through these safety regulations, the industry became safer, attracting more passengers than ever, and as a result, public interest and profits soared.

The connection between civil and military aviation is evident in both domestic and international aviation agreements, laws, and norms. In 1919 at Versailles, France recognized the dual use nature of aviation and attempted to limit Germany's civilian aviation industry development. It faced resistance from Great Britain and the United States because of their own civilian aviation expansionist desires.[24] During this particular time, there was palpable unwillingness by the United States to be "entangled" in European affairs. More specifically, the United States also "would have nothing to do with international controls over civil aviation."[25]

The stalemate that existed in the interwar period had its roots in the conflict between establishing international regulations on civilian aviation and the desire to disarm military air forces. This, of course, was complicated by the routine use of civilian aircraft and personnel for military purposes. Evidence of this can be found anecdotally in the dual-hatted nature of Soviet civil and military aviation arms at the lowest, tactical levels in the 1920s and 1930s and at the highest organizational levels during the Cold War. Their Marshal of Aviation was also the director

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[22] Komons, Nick A. 1989. *Bonfires to Beacons.* Washington D.C.: Smithsonian Institution Press, p. 92.
[23] Komons, *Bonfires to Beacons, p.* 124.
[24] Dobson, Alan P. 1991. *Peaceful Air Warfare.* Oxford: Clarendon Press, p.82-83.
[25] Dobson, *Peaceful Air Warfare,* p.83.

of Soviet civil aviation. Western nations like Britain also engaged in blurring the lines between civil and military aviation as evidenced by their use of commercial travel agencies like Thomas Cook & Son to offer "cover employment" for British spies before World War II.[26]

By the end of World War II, it was obvious that the role of the strategic bomber as a deterrent in the new Cold War was seen as a permanent roadblock to disarmament. Thus, the nations of the world were able to focus on the establishment of international laws and norms for civilian aviation in order to "facilitate the expansion of international routes and traffic."[27] Despite vastly different visions of what international aviation law should consist of, the nations emerging from the ashes of World War II were able to lay the foundations that gave rise to the International Civil Aviation Organization, which regulated various technical standards and the International Air Transport Association, which provided some governance over commercial applications.[28]

In fact, the International Civil Aviation Organization was established following the internationally-attended Chicago Conference in November and December of 1944. Participation was not offered to nations who participated on the side of the Axis Powers during World War II but by the 1970s, membership in the International Civil Aviation Organization had grown to over 140 countries.[29] The objectives of the organization are captured in article 44 of the Chicago Convention.

1. Insure the safe and orderly growth of international civil aviation throughout the world
2. Encourage the arts of aircraft design and operation for peaceful purposes

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[26] Gidwitz, Betsy. 1980. *The Politics of International Air Transport.* Massachusetts: Lexington Books, p.26-27.
[27] Dobson, *Peaceful Air Warfare*, p.85.
[28] Gidwitz, *The Politics of International Air Transport,* p.74.
[29] Gidwitz, *The Politics of International Air Transport,* p.81.

3. Encourage the development of airways, airports, and air navigation facilities for international civil aviation
4. Meet the needs of the peoples of the world for safe, regular, efficient and economical air transport
5. Prevent economic waste caused by unreasonable competition
6. Insure that the rights of contracting States are fully respected and that every contracting State has a fair opportunity to operate international airlines
7. Avoid discrimination between contracting States
8. Promote safety of flight in international air navigation
9. Promote generally the development of all aspects of international civil aeronautics[30]

Chapter 1 Summary

The emergence of the United States Air Force as an independent service did not happen overnight. It is true that in the end, it took an act of Congress to formalize the United States' independent air arm as its newest branch of the armed forces in 1947. However, before that act was passed by Congress, a contextual landscape had been formed over the previous three decades that formed the debate over whether to establish the Air Force in the first place.

The strategic bombing that brought the Axis powers to their knees at the end of World War II was considered one of the decisive factors in the Allies' victory. Had it not been for the role played by the United States Army Air Forces, vast numbers of troop resupplies would not have occurred, support for Allied soldiers on the ground would never have been seen from the skies above, and countless Nazi and Japanese targets would have gone untouched. Through the fire of the Second World War, the mettle of America's Air Force was forged, a precondition absolutely necessary for its birth and a proof of efficacy without a substitute.

[30] Gidwitz, *The Politics of International Air Transport,* p.81.

During the interwar years, the airplane became interwoven into the fabric of American society. Passenger travel, cargo transit, and military transportation became part of the American way of life in a way that the makers of railways, cars, and ships could have never imagined. In the 1920s and 1930s, the United States saw a boom in its airline industry, fueled by a fascination with the skies and the desire for Americans to travel farther, faster, and more efficiently than ever before. Cargo was now able to move from one end of the nation to the other in hours, not weeks. Shipments to overseas destinations became a reality in less than a day. Military movements could now be planned and executed with speed that could never have been conceived by the Army or the Navy. Yes, they conceived of airpower, embraced it to support their needs but their early days with the airplane were only the beginning.

In the same logic vein that emboldened the Army to protect terrestrial commerce and the Navy to protect our commercial shipping vessels at sea, the airplane would now be charged with protecting the commerce flowing through skies. As the United States' economic interests in the air expanded, so too did the requirements on the military air arm charged with protecting them. All that remained were laws that governed the airspace, akin to the terrestrial laws of the land or the international laws of the sea.

The Air Commerce Act of 1926 provided the air industry with the safety standards that it needed to convince an eager American public to put their trust, their lives, and their money into the air. The economic boom in commercial use of the air can be directly attributed to the domestic laws of aviation and the safety that they promoted. After World War II, the remainder of the governing bodies that rose from the ashes secured what would become the International Civil Aviation Organization and the International Air Transport Association, governing bodies that would regulate and standardize the airborne nations of the world.

With the air arm proven in combat, woven into the fabric of the American way of life, tasked to protect a booming airborne economy, and governed by codified domestic and international laws and norms, the Army Air Forces witnessed the contextual preconditions met. These preconditions enabled true public support for an independent air arm. With the final approval from the Commander-in-Chief and support from within the military ranks, Congress had all of the necessary motivation and support to formalize what had gradually come to be, an independent United States Air Force.

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Chapter 2

Historic Calls for a Space Force

Throughout the last two decades, scholarly works have initiated a wide array of calls for an independent space service for the United States. Some of these have been calls from within the USAF, within the other services, or from external scholars taking an "outsiders" perspective of the issue. In mirroring the movements made by air power advocates in the earlier part of the 20th century, spacepower advocates seek to identify why the nation needs to establish an independent branch of service for its space capabilities and warfighters. These movements begin expectedly with an indictment against the USAF or its leadership in an attempt to prove that the best way to further our space capabilities is to establish a new branch of service that can focus solely on space, led by generals who are solely focused on space. There are some valid observations throughout these works. However, they are too focused on endogenous factors contained within the Air Force. Many of these critiques of Air Force bureaucracy, professional developmental education, funding, or leadership are not necessarily going to be solved by creating a separate branch of service.

In fact, this chapter will show how many of the previous critiques of the way the Air Force has fostered space capabilities are overcome by events or have been addressed. So why then, if previous critiques have either been addressed or rendered obsolete, do we not have an independent Space Force? The answer is that these approaches that focus on the endogenous factors and indict the United States Air Force or its leadership are flawed approaches. The focus should be on the contextual elements that must exist in order to precipitate the establishment of an independent Space Force.

A Separate Space Force: An 80-Year-Old Argument

There are authors who examined the calls for an independent space force and did so under the same assumption as contained within this study: that the establishment of an independent Space Force is inevitable and that the "space separatists" advocate for the new service using similar arguments as made 80 years prior when calling for an independent Air Force. Colonel Whittington is one such author. In 2000, he wrote a paper illustrating that these separatist arguments were made in a similar fashion, 80 years apart, under the categories of leadership, doctrine, technology, and funding. [1] This is, however, where this thesis diverges.

Colonel Whittington's central argument focused on comparing the hostile environment created by top Army generals in the interwar period with that of the Air Force in 2000. He showed how General Pershing alienated separatists like Brig Gen Billy Mitchell and made them out to be rogue agents for even suggesting a separation.[2] Colonel Whittington's approach in the leadership component of his paper indicted Air Force leaders for not allowing enough space officers to be promoted beyond the rank of Colonel and placing non-space officers in charge of space units while ensuring that pilots universally remained in command of all flying units. He continues by suggesting that there are not any space officers with the charisma and voice of the aforementioned air separatists and asks "Where is space's Billy Mitchell?"[3] This type of rhetoric is not particularly productive in the debate for a separate Space Force. A more apolitical and objective view would examine how it is that space generals have gradually risen in the ranks of the USAF as a natural evolution.

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[1] Whittington, Michael C. 2000. *A Separate Space Force: An 80-Year-Old Argument.* Maxwell Paper No. 20, Maxwell AFB: Air University Press, p. 2.
[2] Whittington, *A Separate Space Force,* p. 4.
[3] Whittington, *A Separate Space Force*, p. 5-6.

As space capabilities have become more robust and integrated expertly within the Joint fight, the various types of space operations have expanded, leading to more squadrons, groups, and wings. As this occurred over the last 20-30 years, more space officers have gained leadership opportunities and gradually made rank within the confines of Air Force Space Command. Recently, the last three commanders of Air Force Space Command, Generals C. Robert Kehler, William F. Shelton, and John E. Hyten have all been career space officers.[4] Just two years after Colonel Whittington published his paper on the preponderance of pilots leading space units Lance W. Lord, a career missile officer and non-pilot, was promoted to General and made the Commander of Air Force Space Command.

While leaders' experience in space is certainly helpful in advocating for space capabilities, the argument that we do not have a space force because the USAF will not promote space officers is not supported by an examination of today's General Officer corps. Furthermore, the fact that it took 20-30 years for space officers to gradually rise through the ranks is not evidence that the USAF is holding space back; it is merely an indicator that space capabilities, and thus units, have grown in number and importance and through the natural promotion process, the USAF has gained a significant number of space operators in the General Officer Corps. When the nation's reliance on space is strong enough and the capability provided by space is decisive enough, it will be the space officers in leadership positions that will have to make a consolidated push for an independent service. The argument that a new service is needed in order to grow space leaders is an obfuscation of cause and effect.

[4] Prior to the space and missile split with the establishment of Air Force Global Strike Command, career space officers were not only assigned to space operations assignments, but were also assigned to missile alert positions as part of the 13S career path.

Colonel Whittington continues his argument that the USAF is attempting to prevent the rise of space separatists through its doctrine, which he claims focuses on the service's survival as an independent service. He furthers his argument by pointing out that because the USAF has focused its doctrine on survival and because it is the principle agent for space, if space were to separate from the USAF, it would put the USAF survival at risk.[5] A data point that he uses to support this is the merger of the terms "air and space" and "aerospace." He indicates that this was done to irreversibly marry the two domains together as a means of preserving the expanded Air Force missions. Today however, the term "aerospace" is no longer mainstream and beyond that, there have been doctrinal moves to both separate and later rejoin space with air and neither has prompted a separate Space Force.

Colonel Whittington specifically uses the example of the Space Warfare Center and how it was focused on "putting information into the cockpit" and not "articulate a true space doctrine."[6] He pointed out that at the time of his writing, there was no equivalent to the Air Corps Tactical School for space. However, the USAF has embraced space and its tactical and doctrinal development to the extent that space operations has its own course in the USAF Weapons School. In addition to space tactics being developed, doctrine exists at the Joint level in Joint Publication 3-14, Space Operations.[7] If the USAF or even the Department of Defense were attempting to limit space by resisting the development of tactics or doctrine development, this author contends that neither the USAF Space Weapons School nor the development of Joint Publication 3-14 would have occurred. The fact that they have and that we still do not have an

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[5] Whittington, *A Separate Space Force*, p. 8-9.
[6] Whittington, *A Separate Space Force,* p. 9.
[7] Joint Chiefs of Staff. 2013. "Joint Publication 3-14, Space Operations." May 29, 2013. Accessed January 29, 2016. http://www.dtic.mil/doctrine/new_pubs/jp3_14.pdf.

independent Space Force indicates that doctrine is not necessarily a driver for an independent service. Rather, it is a product of the operational need for integrated space operations.

As with leadership, arguing for an independent service in order to focus more on space tactics and doctrine development is not a proper justification. Conversely, when an independent Space Force is established, tactics and doctrine development will continue where it left off when it was in the USAF, but with the guidance and leadership of a service whose sole function is to organize, train, and equip forces for space operations.

In his paper, Colonel Whittington discusses the role of technology in the creation of a new service. He cites several examples of how airpower was a new kind of warfare that could not be compared to weapons on land or sea and that the same could be said for space. He is quick to point out that leaders of the Air Force at the time of his writing viewed space largely as an "enabler" and that this type of rebuttal to the importance of space was "reminiscent of Mitchell's critics."[8] To his point, a component of our national defense that merely enables the other services would not need to have its own branch of service. This idea most certainly drives one of the preconditions being examined in this thesis. To Colonel Whittington's credit, he is correct to say that this new type of warfare should give rise to an independent service and that space should be more than an enabler. However, current USAF and DoD leaders do not view space as a mere enabler and are increasingly vocal about the critical capabilities space systems provide to our national security. There is no questioning the importance of space capabilities, especially with it being specifically labeled as "critical" in the Space Security section of the latest National Security Strategy signed by President Barack Obama in February of 2015.[9]

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[8] Whittington, *A Separate Space Force,* p. 11.

[9] The White House. 2015. "National Security Strategy." May 6. Accessed January 29, 2016.

Colonel Whittington concludes his argument with a discussion on the issue of funding, essentially claiming that the Air Force does not promote an adequate amount of space capabilities development and funding despite it receiving the largest portion of funding for space among the existing services. He pursues this argument by stating that the Air Force has hindered the development of space capabilities by not investing in space-based kinetic or directed energy weapons as recommended by a 1995 Air Force Scientific Advisory Board because it has been focused more on information technology and access to space.[10] A claim like this is speculative at best. It is counterfactual to suppose that if the United States established an independent Space Force, the funding it received would be invested any better than the way in which Air Force Space Command allocates its budget while a part of the USAF. The argument of proper funding is also at odds with the idea that there are bureaucratic costs associated with each branch of service and by creating an independent Space Force, even more money would be spent on the infrastructure, staffs, and headquarters functions associated with a new service. Clearly, if the issue is spending, establishing a new service trades one complication for another. Furthermore, with fiscal environments expanding and contracting in accordance with domestic and international factors, basing the decision to establish an independent service on funding would be attempting to hit a moving target, to say the least. The decision for a new branch of service must be based on something more substantive than mere dollars and cents.

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https://www.whitehouse.gov/sites/default/files/docs/2015_national_security_strategy.pdf, p. 13.

[10] Whittington, *A Separate Space Force,* p. 13.

2001 Space Commission Report

On January 11, 2001 the Commission to Assess United States National Security Space Management and Organization released its report to Congress, detailing several specific recommendations that will benefit the United States in its efforts to protect and promote our space capabilities.[11] This report is critical to the arguments of this study for two reasons. First, it acknowledged some of the many issues that other "space separatists" have promoted but did so in a way that did not lead it to conclude that we need a separate Space Force. Rather, it recommended many courses of action that the Department of Defense has taken, which have ultimately led to tangible improvements with the elevation of Air Force Space Command to a four-star level command and the declaration of the Air Force as the Department of Defense Executive Agent for Space. The fact that these, and many other, actions have addressed the concerns of the quintessential "space separatists" prove that either a separate Space Force is not needed or, more accurately, that it is not the way to fix the issues that precipitated the Commission's report. In other words, the issues of leadership, doctrine, personnel, funding, acquisition, and the support to the air, land, and sea domains have not required a separate branch of service, and the fact that we have largely fixed these issues by following the recommendations of the Commission's report is the proof.

The second reason why this report is so critical to the arguments of this study is that it does acknowledge the future need to have an independent Space Corps or entirely autonomous Department of Space under the Department of Defense, putting it on an equal playing field with the Army, Navy, and Air Force. "In the mid-term a Space Corps within the Air Force may be appropriate to meet this requirement; in the longer term

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[11] Commission to Assess United States National Security Space Management and Organization. 2001. "Report of the Commission to Assess United States National Security Space Management and Organization." Washington D.C.

it may be met by a military department for space."[12] The fact that our nation's space capabilities have flourished after the Air Force established the Commission's recommendations provides more credibility to the prediction that they make regarding the mid and long-term views that an autonomous branch of the military is established for space. This inevitability is one of the positions supported throughout this study.

A Fork in the Path to the Heavens

In 2002, another approach examined the contextual similarities between the establishment of the Royal Air Force in Britain and the USAF in the US decades later. Using a framework examining doctrine, training, leadership, organization, materiel, and soldier development, then Major Jeffrey Swegel compared the endogenous contextual similarities between the two nations' efforts to establish an independent air arm.[13] By analyzing these endogenous factors within each of the services, he separates out the variables of time and budget. By examining these two cases and their endogenous factors, it becomes evident that they are separated by decades and dissimilar fiscal environments.

With respect to doctrine, the author finds that in both cases, the potential exists that the services' plans on how to use the new air weapon may not be compatible with the priorities and objectives of their respective nations. He summarizes that doctrine development should focus on an effects-based approach that keeps national, not service, objectives at the core.[14] However, in the USAF today this is simply not the problem. The manner in which the USAF fosters space capabilities integration in the Joint fight is second to none. The existence of a Joint Functional

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[12] 2001 Space Commission Report, p. 33.
[13] Swegel, Jeffrey R. 2002. "A Fork in the Path to the Heavens: The Emergence of an Independent Space Force." Fort Leavenworth: United States Army Command and General Staff College, p. 4-5.
[14] Swegel, *A Fork in the Path to the Heavens*, p. 44.

Component Command for Space as an element of US Strategic Command is an organizational way in which the DoD ensures our space capabilities, regardless of what branch of service, are integrated and employed in a way that most effectively meets our national objectives.

The review of training and leadership also paint relatively bleak pictures regarding the way the 2002 USAF educated and trained its new space cadre and ultimately grew and matured the leadership for its space professionals.[15] Since then, this author suggests that these indictments are largely overcome by events and are no longer valid. The strides that the USAF has taken to develop space professionals beyond button-pushing operators truly reflects a service that understands the critical value provided by space systems. Furthermore, the organizational charge that the various services do not prioritize space the same way because they have generals with a varying number of stars in charge of their respective space programs is not a problem in and of itself—it is merely a factual statement that the USAF prioritizes space more than the other two branches of service and rightfully so, it is the DoD Executive Agent for Space.

In the conclusion of Jeffrey Swegel's writing, he recognizes that the timing for an independent Space Force was not right and that services should continue along the path they were on, but points out that it was not optimal for space capabilities development and integration. In 2002 when that work was written, it was not the appropriate time and still may not be right at the time of this study, but endogenous abilities to organize, train, and equip are not the only metrics to analyze. Swegel was much closer in another recommendation that stated the time for an independent space service would be right when "space assets become war-fighters, instead of war-enablers."[16] This observation is a factor that is actually

[15] Swegel, Swegel, *A Fork in the Path to the Heavens*, p. 44-49.
[16] Swegel, Swegel, *A Fork in the Path to the Heavens*, p. 56.

more exogenous to the branches of service as it takes into account the technology development of the US space industry, the national objectives being considered, and the technology and national objectives of our allies and adversaries.

Will We Need a Space Force?

In 2004, Major Richard Moorehead published an article in the Military Review journal assessing the debate between proponents and opponents of an independent Space Force within the United States Department of Defense.[17] His argument references similar approaches used in the past and attacks the ways in which he believes the Air Force has not adequately trained leadership, developed doctrine and furthered space technologies on behalf of the nation. He acknowledges that much progress has been made in each of these areas due to the Air Force's assigned role as the Executive Agent for Space and the close watch that Congress keeps on how the Air Force allocates its dollars for space-based programs. He also concedes that Air Force Space Command has done much in the early 2000s to promote space leadership and develop a cadre of space expertise. While noting some recent advances with respect to leadership, doctrine, and personnel, Moorehead advocates that there is still much progress to be made.

Major Moorehead discussed the impact that the threat environment has on the need for a separate service. Much of the article is focused on the dichotomy that exists between the need to defend the nation from a space-based threat and the provocative act of establishing a separate Space Force which he believes would signal to US adversaries that America

[17] Moorehead, Richard D. 2004. "Will We Need a Space Force?" *Military Review* 50-53. Unless otherwise annotated, all references to Richard Moorehead's work are derived from this Military Review journal article in the July-August 2004 edition.

is weaponizing space. He concludes that portion of his study by recommending against any weaponization of space, because in the long run, he contends that the United States will be in a less secure state than it is today. By the end of the article, it is clear that Major Moorehead does not believe that the United States is ready to have an independent Space Force nor that it is entirely inevitable.

> The United States must develop adequate leadership, personnel, and doctrine to create a solid foundation for a possible future Space Force and research and develop new technologies to enable it to respond quickly to threats in space. Once a threat appears on the horizon, a force projection mission will be necessary. Space power will then rise from theory to practice, and there will be a compelling reason for a separate Space Force.

The points that Major Moorehead makes regarding weaponization and its long term effect on the security of the United States are not necessarily at odds with this study but they are tangential to the central issue of whether or not the United States will ever have an independent Space Force and under what conditions such a reorganization would take place. In the aforementioned conclusion, Moorehead believed in 2004 that the United States Air Force had more room for progress in furthering space leadership, doctrine, and personnel which is not entirely untrue for the time period. As has been discussed so far in this study, the lack of a service's ability to foster development of capabilities in a new domain do not necessarily drive the need for a new service. Furthermore, much progress has been made in this area in the last ten years since this article was published but that has not led to an independent Space Force.

Additionally, his argument that a Space Force will be needed only after "a threat appears on the horizon" has proven to be antithetical to the reality of our space environment today. Threats exist in the space environment but there is no serious public debate about establishing a Space Force in the immediate future. In fact, according to the 2016

Director of National Intelligence testimony to the Senate Armed Services Committee, non-kinetic means to deny and disrupt space systems of the United States have already been developed with Russian officials openly acknowledging that they have capabilities to jam space-based radar and are working on laser-based solutions to counter imagery and missile warning satellites.[18] In the same testimony, the Director of National Intelligence James Clapper testified that in 2013, the Russian Duma recommended that they pursue kinetic interceptors that are "able to intercept absolutely everything that flies from space." Clearly, the threats exist but we have not established a separate Space Force. Why not? As this study establishes, the contextual elements, similar in nature to those surrounding the genesis of the Air Force, must be present for the United States to establish its own independent Space Force. A threat in the environment does not, by itself, constitute the necessary context for the development of a new branch of service. It did not in the early 1900s when threats to the airplane existed and holds true for the space domain in today's age.

There are some who argue that the organization of the armed forces should not matter. The point of the military and the aims of its leadership should be to fight and win wars and that the organization really should not be a factor so long as their strategy and policy is sound. John Klein is one such author but even he acquiesces that from a pragmatic and realist perspective, organization does matter. He contends that even though space is seen as an enabler for the other services, there will come a time that "the need for the most efficient and effective combat operations will probably tip the scales in favor of a dedicated and separate space

[18] Clapper, James R. 2016. *Office of the Director of National Intelligence.* February 9. Accessed March 18, 2016. http://www.dni.gov/index.php/newsroom/testimonies/217-congressional-testimonies-2016/1313-statement-for-the-record-worldwide-threat-assessment-of-the-u-s-ic-before-the-senate-armed-services-committee-2016, p. 10.

service."[19] This "eventuality" is not driven by indictments against the USAF or its leadership. Rather, it speaks to the exogenous factors that form a contextual catalyst for an intendent Space Force.

Chapter 2 Summary

This chapter has examined several approaches taken in the early 2000s that largely indicted the Air Force for its ability to foster the development of our space capabilities. The approaches ranged from scholarly efforts to politically appointed commissions. With fifteen years of space capability development as a lens to look through, it is clear that a new branch of service was not needed to develop space leadership, expertise, doctrine, or support for the land, sea, and air. It is also clear that the organizational changes and the authorities bestowed upon the Air Force have allowed the service to foster space capability development for the nation at a world-leading pace. Space separatists that contend the Air Force has done a lackluster job at promoting space do not have any present-day evidence to support their position. In fact, the opposite is true today.

This study contends that perhaps identifying problems with a service's stewardship of capabilities or its leadership is not the most effective approach to discuss the issue of establishing a new and autonomous branch of our armed forces. These factors may be issues for any service to work through, but they do not justify creating a new branch of military service. Perhaps there are exogenous factors that should be considered before the political-military debate of creating a new branch of service even takes place. These exogenous factors are discussed in the next chapter. To accomplish this, the study compares analogous

[19] Klein, John J. 2006. *Space Warfare: Strategy, Principles and Policy.* New York: Routledge, p. 148.

contextual factors that were present prior to the establishment of the United States Air Force. Through this analogous approach, a set of contextual factors can be extrapolated and applied to space, indicating when, not if, an independent Space Force will be established in the United States.

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Chapter 3

Genesis of the United States Space Force

If the United States were to establish an independent branch of service solely charged with the nation's use of space, what are the prerequisites for such a monumental undertaking? In part, the answer to this question can be found in an historic examination of what conditions made it ripe for the US to establish the Air Force as an independent branch of our military forces. However, technological advances and changes in the way the nation prepares for and engages in the conduct of warfare may slightly alter some of the paradigm that could be applied from the days of Generals Hap Arnold, Curtis Lemay and Billy Mitchell, so analogies between the rise of the USAF and the genesis of a US Space Force should not be applied blindly.

There are some paradigms that should be taken seriously as the prominence of space begins to take center stage. One of these is the notion that it will take an act of Congress and support for that must come from both the military establishment as well as the civilian constituencies of the members of Congress. At the end of the First World War, there were some in the aviation community calling for an independent branch of service but far more opposed the measure. Among these opponents were "high-ranking dignitaries, including the heads of the War and Navy departments, members of the General Staff, and others responsible administrative positions of leadership…"[1] By the time World War II was raging, America's air arm was in full swing, public support and military support began to side with autonomy for the Air Force and accordingly, members of Congress began to voice their support on record for various legislative measures advocating autonomy as well.[2] For there to be a true debate

[1] McClendon, *The Question of Autonomy for the United States Air Arm,* p. 73.
[2] McClendon, *The Question of Autonomy for the United States Air Arm,* p. 216.

over the establishment of a United States Space Force, its efficacy will need to be much more beyond a supporting role and its role as a "full-spectrum warfighting force" will have to be "combat-tested" in a way that has yet to occur.[3]

In much the same way that the United States Navy was established to protect the sea-based lines of communication and commerce, the day will come that a Space Force will be needed to offer protection that is commensurate with the importance and the magnitude of the space-based lines of communication and commerce. The notion that space is being recognized as a domain that requires its own unique means of protection is being echoed from the highest levels of the Department of Defense:

> For so many commercial space endeavors, we want this domain to be just like the oceans and the Internet: free and safe for all. There are some in this world who don't want that to happen – who see America's dominance in these and other areas and want to take that away from us in the future so that we can't operate effectively around the globe. So we're not waiting to invest until the threats are fully realized. We're investing now so we stay ahead of them.[4]

This chapter is structured in a way that parallels the chapter reviewing the rise of the United States Air Force. The first section reviews the impact that space capabilities have had on the United States and its way of making war. The section concludes with the assertion that once proven through combat, space capabilities may prove their worth in the same manner that the Army Air Forces did during World War II. The second section examines the emergence of space travel, transit, and transportation. While these three take on a different form than in the air,

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[3] Lambeth, *Mastering the Ultimate High Ground,* p.73-74.
[4] Carter, Ash. 2016. *U.S. Department of Defense: Remarks Previewing the FY 2017 Defense Budget.* February 2. Accessed February 12, 2016. http://www.defense.gov/News/Speeches/Speech-View/Article/648466/remarks-previewing-the-fy-2017-defense-budget.

the analogy to the environmental context that existed prior to the establishment of the Air Force is valid as prerequisites for the establishment of a Space Force. As was done in the chapter on the rise of the Air Force, the third section of this chapter focuses on the massive contribution made by space capabilities to the United States economy. Finally, this chapter concludes with a review of the necessary international laws and norms that should be established prior to the establishment of a Space Force. This final section of the chapter acknowledges the work done to date on international laws and norms but recommends that additional clarifications are needed prior to the establishment of the United States Space Force.

Decisive Space Capabilities, Critical Reliance, Crucial Defenses

The decisive impact of space on our warfighting capacity, as well as our reliance on it are well known throughout the highest levels of the Air Force. "The secret is out that the American way of life, as well as the way of conducting warfare depends very heavily on space capabilities for global reach, command and control, precision timing and navigation, and folks have figured that out." [5] The impact of space on the United States military can be categorized in one of three ways. First, space can present a decisive capability that has proven essential in combat, similar in magnitude to the capability of strategic bombing during World War II. In space, this may take the form of a unique capability that only space can provide or a decisive offensive capability that involves striking terrestrial targets from space-based weapons.[6] Second, our armed forces can form a reliance on

[5] Swarts, Phillip. 2016. "Air Force Times." *U.S. needs to defend space assets, Pentagon space expert says.* January 29. Accessed January 30, 2016. http://www.airforcetimes.com/story/military/2016/01/29/us-needs-defend-space-assets-pentagon-space-expert-says/79522066/.
[6] Lambeth, *Mastering the Ultimate High Ground,* p. 98.

space in such a way that negating those space capabilities would undermine the rest of our fighting force. Finally, the way in which our adversary can employ their offensive space capabilities can create a crucial vulnerability against which the United States must defend. This need to defend space assets from the growing threat is something that senior defense officials are openly discussing with the public. One such official is Major General Robert Rego, the newly appointed leader of the Joint Interagency Combined Space Operations Center for US Strategic Command. "Potential adversaries are rapidly developing capabilities to deny the US and its allies' use of space during conflict."[7]

In the 1950s and again in the 1990s, the conjoining of air and space into the term "aerospace" was the first attempt to describe the reliance of our air capabilities on space.[8] This, of course, was an attempt by the Air Force to ensure that it held onto the role of being the Department of Defense lone service for the country's access to space. It suggests a limitation on the integration of space solely to the air domain. Not long into this "aerospace" movement, scholars and military leaders alike called for even more integration with the other services. Since then, our Joint doctrine has evolved with respect to our space capabilities to the point that reliance on space is just as engrained in our land and sea forces as it is with our air forces. By integrating space into all of the other services, it has become less tied to air and viewed more as a set of space-specific capabilities that augment the United States military as a whole. Whether it is a space capability, protection of a space-based vulnerability, or a critical reliance on space, a precondition for the establishment of an

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[7] Walters, Greg. 2016. *Vice News: The Pentagon Is Betting Big on Space Warfare — Against China and Russia.* February 12. Accessed February 12, 2016. https://news.vice.com/article/the-pentagon-is-betting-big-on-space-warfare-against-china-and-russia.

[8] Lambeth, *Mastering the Ultimate High Ground*, p. 132-133.

independent Space Force is the war-testing of space as something far more than an augmentation to the air, land, or sea forces.

As previously argued, the USAF was born from the united voice of the aviators in the Army Air Forces, touting the decisive factor that strategic bombing provided during World War II. This capability, while recognized by some decades earlier during the First World War, was finally war-tested and could be unequivocally named a key contributor to the Allies' success in defeating the Axis war machine during the Second World War. Could this same logical argument be applied by leaders inside Air Force Space Command one day? If so, it would seem as though it would need to come from a consolidated voice from within the Air Force Space Command and only after the nation's space-based capability has been tested through war. During the push for the autonomy of the Air Force, "the burden of proof fell upon those who wished to make a change."[9] World War II provided this requisite proof. The question for those pushing for an independent Space Force is when will their proof come into being and in what form? Alternatively, has the decisiveness of space already been tested through war?

After all, satellite imagery in the 1960s and space-based missile warning in the 1970s had already made a great contribution to the Cold War. Satellite communication, imagery, and weather assessments were also brought to bear from space during Vietnam. But these contributions could hardly be labeled as decisive by any means. One could point towards Operation Desert Storm, aptly called "the first space war," because it marked the first conflict where space assets were on orbit prior to the conflict, and those assets were applied in direct support of all levels of conflict.[10] Particularly, it is estimated that 85% of the communication in

[9] McClendon, *The Question of Autonomy for the United States Air Arm,* p. 217.
[10] Nair, K. K. 2006. *Space: The Frontiers of Modern Defence.* New Delhi: Knowledge World, p. 16; Lambeth, *Mastering the Ultimate High Ground,* p. 72-73.

and out of theater rode on satellite communications and the dependence on space-based navigation with the required ground receivers was essential as soon as troops entered the theater. Furthermore, the coalition relied on satellites like the Defense Support Program to provide early earning in an effort to detect and shoot down incoming Scud missiles.[11] Other accounts of the war agree roughly with these percentages and contributions but in the immediate aftermath of the war, it was not universally apparent that space was a game-changing entity in modern warfare. In one account written only four years after the Gulf War, a pair of authors described the contributions of satellite communications in terms of phone calls and referred to the missile warning provided by the Defense Support Program as reconnaissance.[12] While these may be technically accurate for the time, this illustrates the paradigm at the time that space was there to provide phone calls and the occasional notice that a missile was launched. The impact was much more. It has taken more than two and a half decades since "the first space war" for the United States military to embrace this impact.

Despite this reliance on significant capabilities and the unofficial title of "the first space war," Operation Desert Storm cannot be considered a means of testing space as a decisive capability for two reasons. First, just as the First World War was to airpower, Operation Desert Storm saw the first overt use of space, but its capacity in war was still limited. The capabilities, tactics, and implementation doctrine was as immature during Operation Desert Storm as it was for the airplane during World War I. In addition, space capabilities were poorly integrated with the other services and largely uncontested by the adversary. Since Operation Desert Storm, the United States has been embattled against adversaries in the Middle

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[11] Nair, *Space: The Frontiers of Modern Defence,* p. 16-17.
[12] Keaney, Thomas A., and Eliot A. Cohen. 1995. *Revolution in Warfare? Air Power in the Persian Gulf.* Annapolis: Naval Institute Press, p. 161-164.

East, most notably in Afghanistan and Iraq. Have 15 years of war in these two nations constitute the needed war-testing for decisive space capabilities?

During Operation Iraqi Freedom and Operation Enduring Freedom, the United States was engaged in two different wars against two very distinct adversaries. Space, however, did not play the central role in the fight against the Taliban in Afghanistan nor the insurgence in Iraq. This is not to downplay the tremendous capabilities brought to the fight through our space systems. Still, they have largely been in a supporting role albeit a critical factor, along the lines of the air role during World War II. It is true that the use of remotely piloted vehicles has been enabled via satellite communications and overhead intelligence assets provided critical information for theater commanders. Nonetheless, these capabilities were still in a supporting role and were exercised against an adversary who did not possess any means to contest their efficacy.

Once again, this study is not down-playing the role that space has played in supporting our overseas operations. Rather, it agrees with the critical nature of space support but asserts that as a war-testing precondition to be met for the United States to establish a Space Force, the conflicts thus far, have not proven the case. In 2011 on the topic of in-theater space support professionals, the Commander of Air Force Space Command, General Shelton, said in his testimony to Congress that they "provide critical forward-based space expertise enabling integration of space capabilities into air and ground operations in Kandahar and Mazar-e-Sharif, Afghanistan. Their presence allows expert knowledge transfer to tactical users, including Army brigades and battalions, Joint Terminal Attack Controllers and other battlespace owners."[13] As a space

[13] Department of the Air Force. n.d. *Presentation to the Senate Armed Services Committee.* Accessed August 3, 2013. http://www.airforcemag.com/testimony/Documents/2011/May%202011/051111shelton.pdf.

professional, the author of this study agrees with the critical supporting role that space played. However, one must also acknowledge that for the purposes of being a decisive factor in a war-tested environment, these wars fall short of meeting this precondition.

What would testimony like this look like if space had played such a decisive factor in a war-tested environment? Space would be described in terms beyond integration with the air and ground, space operators would be the tactical users benefitting from others' supporting functions, and instead of Army brigades and battalions being the battlespace owners, it would be squadrons of space operators owning the battlespace. Despite the significant capabilities provided by space during the most recent wars in Iraq and Afghanistan, one inescapable condition has not yet been met to support the claim that space has been war-tested. The United States has not yet fought against an adversary who is symmetrical with respect to its space capabilities.

It is unquestionable that US reliance on space is great and the asymmetric advantages afforded to the US through space are also beyond debate. However, the nation has yet to prove the decisiveness of space capabilities through a contest against a symmetrical adversary. Some scholars attempt to extrapolate what future war fighting may look like, based on historical development of United States military capabilities in the air, land, and sea domains. Results from these attempts to predict our expansion into space include troop transport through space, kinetic weapons from space, or even manned command centers in space.[14] While technically the work of science fiction today, it may become routine in the world of tomorrow, a world where space is much more than an enabler of terrestrial forces, where space is a source of military capability unmatched by any of the existing DoD services. Admittedly, that world of tomorrow is

[14] Friedman, George. 2009. *The Next 100 Years: A Forecast for the 21st Century.* New York: Doubleday, p. 166-169.

not far from the world of today, acknowledged by the current Deputy Undersecretary of the Air Force for Space. "We have been in this area for some time where we treated space as an enabler of function as opposed to a warfighting domain…And so we find ourselves now looking at something that we have largely taken for granted for several decades…We need to figure out what we need to do to adjust, to treat it just like we do every other domain."[15]

To be clear, this study is not in any way advocating a Cold War in space or for that matter, any war in space. Simply put, the baptism by fire for the nation's space capabilities, one that only conflict can provide, would be the only element needed to transition from prophecy to reality. Furthermore, regardless of what specific capabilities the future holds, it seems that it should be through actual conflict or contest, be it hot or cold, that the decisiveness of space forces be put to test. Only then will a culturally indicated precondition for the rise of an independent Space Force most surely be met.

Digital Collections

Civilian Space Travel, Commercial Transit, and Military Transportation

James Clay Moltz, a renowned author and Professor at the Naval Postgraduate School writes, "If space travel is to become more like air travel, it will require a set of coordinated national regulations to ensure safety and set standards for acceptable behavior…To date, the limited scale of space tourism has not merited the effort required to accomplish this task. It seems very likely, however, that demand will grow in the coming decade and cross that threshold."[16]

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[15] Swarts, Phillip. 2016. "Air Force Times." *U.S. needs to defend space assets, Pentagon space expert says.* January 29. Accessed January 30, 2016. http://www.airforcetimes.com/story/military/2016/01/29/us-needs-defend-space-assets-pentagon-space-expert-says/79522066/.

[16] Moltz, James Clay. 2014. *Crowded Orbits: Conflict and Cooperation in Space.* New York: Columbia University Press, p. 184.

In a similar tone used in the chapter on the rise of the United States Air Force, it is necessary to define civilian space travel, commercial transit, and military transportation as they apply in the ethereal backdrop of outer space. This study defines civilian space travel as the movement of civilians in and through space, including the rising industry of space tourism. For the purposes of this thesis, commercial transit is defined as the movement of goods and services into and through space, to include providing space launch and electronic goods and services such as telecommunications. Finally, military transportation is defined as the movement of military personnel, materiel, and information in and through the space domain. While military troop transport and materiel shipment does not yet occur through space because of the excess risk and cost, the transport of information does occur through military satellites. Space transport in the form of signals transmission is only the beginning. Some may contend that the military transport of signals through space supplants the need for the movement of personnel or materiel, but as launch costs and risks decrease, the need to insert military special ops teams or critical materiel into an area of denied airspace in a matter of hours may only find a feasible solution through the medium of outer space.

Civilian space travel would have seemed like something from a science fiction novel in 1947 but in 2016, it is becoming a reality. While limited adventurists have paid millions of dollars for rides into space, the establishment of space travel runs deeper. In fact, the United States recognizes the growing need for commercial space travel and tourism regulation and has established an office dedicated to commercial space tourism.[17] This office provides guidelines for space tourism but also issues the necessary permits for launches, reentries, and experimentation as required by the Commercial Space Launch Act of 2011. This is not to

[17] Federal Aviation Administration. 2015. *Office of Commercial Space Transportation.* August 25. Accessed February 26, 2016. http://www.faa.gov/about/office_org/headquarters_offices/ast/

suggest that space travel will replace all other forms of travel. For just as with newly formed air travel, leaders of the industry knew that "aviation is just another form of transportation which will not replace, but merely supplement other ways of travelling."[18] The school of thought at the beginning of commercial air travel was that as long as the amount of time it takes for someone to go door-to-door via air, including parking and airport logistics, is less than by car or by rail, commercial air will have a role in the industry.[19] Even more so for space travel, those who can afford a more expensive ticket to shave hours off of a trip to the other side of the world will be the first regular space travelers. As ticket prices decrease and the number of space ports increases, the industry will expand in the same manner as its air-breathing predecessors.

A related but distinct aspect of the US space-based economy is commercial transit, including commercial space launch and telecommunications providers. There is much room for growth in the commercial transit industry but the growth observed in the last decade is staggering. In 1999, commercial space transit which consisted largely of commercial space launch and some telecommunications, accounted for just over $60 billion.[20] Ten years later, a study of the industry revealed that it had more than tripled in size, with an estimated economic impact of $208 billion in 2009, due to the massive growth of the commercial space-based telecommunications industry.[21]

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[18] Piper, W. T., and Lucien Zacharoff. 1946. *The Utility of the Personal Airplane With Relation to Properly Located Airports.* New York: Duell, Sloan and Pearce, p. 104.
[19] Piper, W. T., and Lucien Zacharoff. 1946. *The Utility of the Personal Airplane With Relation to Properly Located Airports.* New York: Duell, Sloan and Pearce, p. 106.
[20] Federal Aviation Administration Office of Commercial Space Transportation. 2010. *The Economic Impact of Commercial Space Transportation on the US Economy in 2009.* The Tauri Group, LLC, p. 2.
[21] Federal Aviation Administration Office of Commercial Space Transportation. 2010. *The Economic Impact of Commercial Space Transportation on the US Economy in 2009.* The Tauri Group, LLC, p. 2.

The growth of the commercial interests in space is not inherently independent of government efforts and this coordination between the public and private sector is not new. During the interwar years, aircraft development did not fall solely on the shoulders of the public or private sectors. Rather, it was a shared investment in technologies that both entities recognized as a future way of life. During the interwar years, one must recall that it was Boeing who continued with its privately financed program for a long-range bomber eventually known as the B-17 Flying Fortress.[22] Furthermore, airplanes were being built by private citizens in their garages, an indication of both the enthusiasm and widespread investment in the developing technology. The parallels to today are obvious: University engineering classes are building satellites that are being launched into space and the World View satellites and Falcon-9 rockets produced today by private companies are helping to forge a path to the heavens. In both of these examples, their utility spans commercial and military purposes, a nod to Boeing's B-17 from nearly a century ago.

Protection of a Space-Based Economy

> Just as the major trading states of history had to establish strong military forces to patrol the seas, providing a safe operating environment for trade and commerce to prosper, the top spacefaring states would see it in their own best interests to establish a space force capable of dominating the major space trade routes, point locations of commercial and military value, and decisive regions of strategic control necessary to maximize space power.
>
> -Everett C. Dolman, author of Astropolitik[23]

[22] Kelly Jr., Charles J. 1963. *The Sky's the Limit: The History of the Airlines.* New York: Van Rees Press, p. 145.
[23] Dolman, Everett C. 2002. *Astropolitik: Classical Geopolitics in the Space Age.* Portland: Psychology Press, p. 173.

Spacepower theorist Everett C. Dolman argues that the United States should seek hegemony in space in order to maximize its military power and economic gains, especially before it becomes impossible to do so because of a rising challenger. This belligerent view of space would ultimately lead to an unnecessary arms race that stifles cooperation and growth in space and back here on Earth. However, his point is well taken. The United States has considerable equities in space and must be able and willing to protect them. Even as of 1997, then CINCSPACE General Howell M. Estes III recognized that with $250 billion invested in space assets, the United States space economy had become "an economic center of gravity and, hence, a major vulnerability of the United States and its allies."[24] A lot has happened since 1997 but just how much needs to advance before the United States space economy becomes *the* center of gravity and not just *a* center of gravity?

A dichotomy often exists between a government's ability to promote economic development and ensure its own national security. Space is certainly no exception. With the immense commercial imagery industry in space booming, companies are developing more capable sensors and with that, a new security dilemma is born. One could go so far as to say that imagery, communication, environmental monitoring, and the position, navigation, and timing of the Global Positioning System could be considered "global utilities."[25] Peter Hays' analysis continues on this topic and suggests that in, accordance with observed history, military services have regularly ensured protection of emerging regimes and again, space should be no exception.

Whether they are considered global utilities or individually-packaged utilities belonging to distinct nations, the need to protect the

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[24] Lambeth, Benjamin S. 2003. *Mastering the Ultimate High Ground.* Arlington: RAND Project AIR FORCE, p. 99.
[25] Hays, Peter L. 2011. *Space and Security: Contemporary World Issues.* Santa Barbara: ABC-CLIO, p. 63.

economic equities is analogous to the air, land, and sea-based lines of communication that are protected by the existing military branches of service today. These "celestial lines of communication" include physical and non-physical forms that are comprised of trade, materiel, supplies, personnel, spacecraft, data, and information.[26] The need to defend these celestial lines of communication is acknowledged as a principle duty of the United States Air Force. The Deputy Undersecretary of the Air Force for Space, Winston Beauchamp told the Air Force Times, "In the same way that we would take action to defend a commercial ship that is threatened by an adversary on the high seas, or a commercial airliner that was threatened by an adversary missile or fighter plane, we must do the same in space." [27]

As has been the theme in this study, the United States Air Force has done a superb job at protecting these celestial lines of communication thus far. Nonetheless, as the United States depends on them at an increasing rate, eventually, the amount of space-based lines of communication will grow to such a size and complexity that an independent branch of service may be established for their protection.

The need for the United States to protect this emerging set of global utilities is obvious. Just how the United States should offer this protection is not as obvious. A whole of government approach is needed to protect global utilities but, at some point, the role of the United States Air Force to invest a preponderance of its assets to protect these utilities is an unfair task to a service that should remain focused on the domain in which it was born. Thus, at some point in the future, the need to protect global

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[26] Klein, John J. 2006. *Space Warfare: Strategy, Principles and Policy.* New York: Routledge, p. 49-51.
[27] Swarts, Phillip. 2016. *Air Force Times: US Air Force will defend civilian space assets, official says.* March 17. Accessed March 17, 2016. http://www.airforcetimes.com/story/military/2016/03/17/us-air-force-defend-civilian-space-assets-official-says/81916264

utilities operating in or through space will become burdensome to a service that must remain focused on the air to fly, fight, and win. This burden may be relieved only by assigning protection of the global utilities in space to a branch of service born from space.

International Norms and Regulations for Space Operations

> The U.N. does not have any enforcement authority; it does not. But I think it's only going to be through an international process that we come through and I think that we have to define rules of the road for what it means in space and then we have international norms that we can deal with. Right now, there are very few norms established for how you operate in space.[28]
>
> - General John E. Hyten
> Commander, Air Force Space Command

Establishing norms and regulations should be considered a precondition for the rise of an independent Space Force because it provides a right and left boundary within which our space operators, and those of all other spacefaring nations in the world, can occupy. These right and left bounds are crucial for several reasons. First, they establish an international standard for conduct in space to which all nations can hold each other accountable. Additionally, robust international norms and standards form the base upon which mutual trust and cooperation can be built through international cooperation and initiatives. Finally, they provide specific limits on spacefaring nations who seek to use space for nefarious purposes—these limits, once established and enforced, become the rule of law that nations follow in peacetime. Whether or not they constitute the rule of law during wartime may be a separate issue altogether.

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[28] Hyten, John E. 2015. *Small Satellite Conference Keynote Speech.* August 10. Accessed February 23, 2016. http://www.afspc.af.mil/library/speeches/speech.asp?id=759.

To date, comparatively little has been finalized and codified with respect to the establishment of international norms and regulations for humankind's utilization of space. Technology, and the manner with which we apply it, has grown exponentially since the Outer Space Treaty of 1967. Gaining specifics on the use of outer space within the international community is no easy task however. Competing ideologies, nationalist interests, and a disparity in the technological readiness of each nation further complicate the task of establishing these norms and regulations. Nevertheless, much work has been done within the United Nations to establish updated norms and regulations that are amenable to the globe's spacefaring nations. The following section discusses these norms and regulations in order to characterize which aspects of our use of space must be normalized and regulated in the international community. Without these norms and regulations, we are bound to artificial boundaries that are rooted more in public opinion than on internationally agreed upon substance. This section explores the historical norms and regulations governing humankind's engagement with space and identify where additional norms and regulations are necessary in order to ensure a more ordered and structured use of the domain. Additionally, this section discusses the current efforts to establish a modern set of norms and regulations and makes recommendations as to what must be agreed upon as a precondition for the United States to establish an independent Space Force.

Significantly more time and effort is afforded to this section for one simple reason: humanity needs internationally agreed upon laws and norms because there are not enough resources for one nation alone to enforce space-based order. In reference to Everett Dolman's *Astropolitik*, James Clay Moltz describes three possible futures for the militarization of space and all of them point to the inevitable conclusion that international

laws and norms are needed.[29] First, he describes a possible future in space where one major superpower, or hegemon, is able to govern the use of space. He concludes that even for the top spacefaring nations, this would prove too costly a task.[30] This hegemony gives way to a coalition of sorts, and if that fails, space would ultimately become anarchic, with all spacefaring nations launching their own space weaponry to counter the perceived threats from one another.[31]

Another possible outcome in the management of space in what Moltz calls "piecemeal global engagement." In this construct, humankind continues down the path of disparate initiatives and treaties which may work in the near term for commerce and exploration, but will not be sufficient in areas of security matters.[32] In the short term, this solution is effectively able to patch together agreements regarding global commerce and exploration because the number of spacefaring nations is relatively small and the relationships are relatively simple. In the future, as more nations take to the heavens, this patchwork of agreements must give way to a more robust international governance to maintain security and order. This study discusses some of these current initiatives and acknowledges that they are not the final answer in terms of our self-governance of space, but are certainly an important next step and ultimately a prerequisite to the establishment of an independent Space Force.

Finally, Moltz offers a third mechanism of governance in space and it involves robust international institutions. He acknowledges that the world's spacefaring leaders have a lot of work ahead of them to achieve this and ad hoc international agreements may help bridge the gap between where humanity is now and where it ought to be.[33] This third mechanism

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[29] Moltz, James Clay. 2014. *Crowded Orbits: Conflict and Cooperation in Space.* New York: Columbia University Press, p. 178.
[30] Moltz, *Crowded Orbits*, p. 181.
[31] Moltz, *Crowded Orbits*, p. 179-181.
[32] Moltz, *Crowded Orbits*, p. 182-184.
[33] Moltz, *Crowded Orbits*, p. 184-189.

of governance is not entirely dissimilar from the second but where there used to be a patchwork of agreements, in this third construct, all spacefaring nations of the world cede some of their individual autonomy in space to allow for more authoritative international governance of the global commons.

Regardless of the forms that international norms and regulations take, the United States must be prepared for the inevitability of space as a warfighting domain. With peacetime norms and regulations, wartime operations in and through space would devolve into total chaos. Many argue that space is and always should be used for peaceful purposes. These members of the "sanctuary school" contend that the United States would have the most to lose and very little to gain if it prematurely weaponized space.[34] However, a counter to this position is that the United States cannot afford to be ill prepared if an adversary fails to adopt the mantra of the peaceful uses of space. As far back as 1996, the outgoing Commander-in-Chief of the United States Space Command, General Joseph Ashy said, "it's politically sensitive, but it's going to happen. Some people don't want to hear this, and it sure isn't in vogue…but – absolutely – we're going to fight in space. We're going to fight from space, and we're going to fight into space when US and allied assets on orbit become so precious that it's in our national interest."[35] This thesis is not agreeing for or against the weaponization of space. Rather, it is arguing that international norms and regulations are needed and should be adopted through initiatives promoted by the spacefaring leading nations of the world. These norms and regulations will at a minimum, provide a common understanding about humankind's utilization of space and may, perhaps, serve as a precondition for the establishment of the United States Space Force.

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[34] Lambeth, *Mastering the Ultimate High Ground,* p. 116.
[35] Lambeth, *Mastering the Ultimate High Ground,* p. 117-118.

Outer Space Treaty of 1967

The Outer Space Treaty of 1967 was birthed in a time of great turmoil when the world had taken a step back from the brink of thermonuclear war, but also when tensions between the United States and the Soviet Union were still very palpable. Not surprisingly, its tone is one of caution and subtle optimism, taking care to restrict the most overt means of militarizing outer space. While it does not address many specific actions previously beyond conception in 1967, it "enjoys the broadest subscription and the highest regard" among the multitude of signatories, many of whom were not spacefaring nations at the time but have since come into being in the present.[36] The 17 articles of the Outer Space Treaty serve to establish that space is a place for exploration and peace, a noble aim, but certainly a response to the tense terrestrial climate of the Cold War.

In totality, the Outer Space Treaty of 1967 provided the necessary norms and regulations to the spacefaring nations of that time, ensuring parties to the Treaty had the necessary freedom to explore space while attempting to limit the competition between them and promote cooperation above all else. Today, things are evolving. The existential threats faced by the world during the height of the Cold War have subsided enough and at the same time, more and more nations are reaching to outer space. Competition and cooperation are both alive and well in this domain. We can observe the competitive nature between the United States and near-peers like Russia and China, and at the same time, witness the cooperation among spacefaring nations on projects like the International Space Station and scientific and exploration initiatives sponsored by international organizations like the European Space Agency. To ignore the

[36] Reynolds, Glenn H., and Robert P. Merges. 1997. *Outer Space: Problems of Law and Policy, 2nd Edition.* Boulder: Westview Press, p. 62.

competitive nature of individual spacefaring nations and only embrace international cooperative efforts leads us to optimistic and vague guidance. This will only embolden some to push the limits where none are provided. Norms and regulations needed in today's environment must address the specific ways in which humankind has militarized space. These norms and regulations must address the balance between overt cooperation and covert militarization.

Globalization, interconnectedness, and the rise of spacefaring multinationals have all given ample reasons to address the non-state actor as a spacefaring entity with updated norms and regulations. In concert with the reality of corporations expanding their interests into space, the aspects of the Outer Space Treaty of 1967 that discourage anyone from harvesting resources from the moon or celestial bodies for individual profit, must be amended or repealed altogether. These measures remove any incentives for commercialization of space and ignore the terrestrial precedents set by humankind on Earth.[37] The sharing of resources sounds like an altruistic notion but in reality, the competition over resources is engrained in human DNA. We must acknowledge this and adopt realistic guidelines for commercial ventures in outer space. In summary, it is imperative that the international norms and regulations continue to embrace the essence of cooperation and peaceful exploration of space while paying due attention to the existence of competition and the militaristic exploitation of space.

Report of the Committee on the Peaceful Uses of Outer Space

The Report of the Committee on the Peaceful Uses of Outer Space is clear evidence that the spacefaring nations of the world desire norms and regulations that both promote cooperation and peaceful uses of outer

[37] Dolman, *Astropolitik,* p. 136-137.

space while accepting the reality of the militarization of space. Of note, this study acknowledges that not all points of view may be represented in the final report.[38] The focus on peaceful uses of outer space indicates a heavier influence of arms control regimes and may not acknowledge what must be done with those nations who seek to weaponize space. This section reviews this report as a means of establishing the current state of outer space norms and regulations. It analyzes some key observations and recommendations contained in the report in an effort to identify the specific areas that spacefaring nations must establish international norms and regulations to ensure a civilized expansion into space, be it peaceful or otherwise.

One overarching observation of the recommendations in the report is that there is much difficulty reaching a consensus among the increasingly high number of spacefaring nations in the world.[39] This issue is not unique to space. However, with a relatively weak starting point, arriving at meaningful international laws and norms becomes increasingly difficult as nations' dependence on space becomes more prevalent. The report highlights the many different points of discussion that will need to be solved for there to exist a complete set of international laws and norms. For example, nations have debated the right to self-defense in outer space and whether or not the self-defense clauses in the existing United Nations Charter are sufficient.[40]

Other nations expressed concern over the sheer number of orbiting objects and the increased likelihood of collisions in space.[41] While concern over orbital debris is certainly justified and should be a high priority for all spacefaring nations, there exists numerous challenges associated with

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[38] United Nations. 2015. *Report of the Committee on the Peaceful Uses of Outer Space*. Official Records, New York: General Assembly.
[39] United Nations. *Report of the Committee on the Peaceful Uses of Outer Space.*
[40] United Nations. *Report of the Committee on the Peaceful Uses of Outer Space.*
[41] United Nations. *Report of the Committee on the Peaceful Uses of Outer Space.*

adopting an international standard and a means of enforcing it. Solving the issue of mitigating or reducing orbital debris can easily be compared with the monumental challenges associated with reducing carbon emissions. If one looks at space from an environmental standpoint, an analogous situation exists between the "pollution" of the space environment with orbital debris and the increasing levels of carbon dioxide in the Earth's atmosphere. In both cases, it takes increased investment to make use of the domain while minimizing the environmental impact. Those nations who are further developed will need to lead the developing nations of the world down a path that is beneficial to all, including but not limited to the development of technologies that can remove or mitigate the effects of orbital debris. A final point on orbital debris is what to do with those nations whose actions dramatically and unnecessarily increase the amount of orbital debris. In the case of the 2007 Chinese Anti-Satellite test, the amount of orbital debris generated was staggering. International laws and norms must be able to address the penalties associated with such deliberate, environmentally harmful events.

Another difficult challenge facing the international community is the weaponization of space. It should be obvious that a Committee on the Peaceful Uses of Outer Space would naturally seek to ban all weapons in space. This is not a realistic proposition. With respect to weaponization, this is one area where the Outer Space Treaty of 1967 holds true today. First of all, the ability to monitor and enforce such a stipulation would be difficult or perhaps impossible, especially when the dual-use nature of orbital technologies means that any object could be used for peaceful or war-making purposes. Secondly, banning the placement of weapons in space will only limit the responsible, developed spacefaring nations in the world as those who are less developed or traditionally less compliant with international laws and norms will use weapons in space regardless of whether or not they are permitted. One does not need to look any further than Iran and North Korea's missile programs to see a technologically

capable nation defying international laws and norms to pursue their own interests.

The Committee Report did acknowledge the positive strides that nations have made with respect to bilateral and multilateral agreements in science and exploration.[42] Their fundamental role in this sense, is to promote this type of international cooperation to promote a peaceful use of space. This is another aspect of the United Nations that would not be unique to space. Much of their roles and responsibilities center around promoting cooperation and information exchange between nations. It is in this realm that the United Nations would have the greatest utility. This is not to suggest that the United Nations should divorce itself from the responsibility to establish, promote, and enforce other laws and norms because their role cannot be limited to fostering cooperation and information exchange. The leading spacefaring nations of the world must be willing to cede some of their autonomy in exchange for promoting the legitimacy and power of the international regime to regulate some of the ways in which humankind occupies space.

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Center for a New American Security Space Report

Independent, bipartisan think tanks have also provided many recommendations to the United States Government regarding the norms or law that it should consider regarding space activities. While these efforts do not directly drive policy or law, they do contribute to the intellectual debate through careful analysis and inform those who do have direct influence over policy and law. This study analyzes one such think tank with the heavy caveat that it is merely one point of view and there is little or no evidence that recommendations contained in the report have had any direct impact on shaping domestic or international spacefaring

[42] United Nations. *Report of the Committee on the Peaceful Uses of Outer Space.*

laws and norms. This report is an example, one of many, that debates the strategies and policies being decided hear on Earth and carried out many thousands of miles away in space. Ultimately, what makes it to the floor of the United Nations for votes and signatories is the true measure of humankind's commitment to developing international laws and norms.

In a recent report from the Center for a New American Security, Elbridge Colby recommends that the United States consider the following:

1. Being the first to carry war into space is escalatory and irresponsible.
2. Kinetic attacks that cause lasting damage to humanity's ability to exploit space abilities are prohibited.
3. Attacks on or interruptions of strategic space assets would be construed as highly escalatory, and should be presumptively disfavored.
4. Satellites and space assets not directly and substantially involved in a conflict are not legitimate targets for attack.
5. Attacks in space justify responses outside of space.[43]

The first consideration for the United States cautions against carrying war into space.[44] First of all, this is a nebulous consideration and in its lack to be specific, it lacks to be relevant. What exactly is meant by carrying war into space? Certainly, kinetic strikes against space-based satellites would fit this description but what about ground-based capabilities that reach into space non-kinetically? The caution also implies that war has not yet been carried into space but offers little evidence to support that position. If war had already been carried into space, despite not having a clear definition of what that is, the United States would be well advised to defend itself, making this first consideration a moot point.

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[43] Colby, Elbridge. 2016. "From Sanctuary to Battlefield: A Framework for a U.S. Defense and Deterrence Strategy for Space." *Center for a New American Security*. January 27. Accessed February 2, 2016. http://www.cnas.org/sites/default/files/publications-pdf/CNAS%20Space%20Report_16107.pdf, p. 21.

[44] Colby, *From Sanctuary to Battlefield*, p.21.

The second consideration carries much more weight and addresses the issue of orbital debris generation without actually specifying it. Presumably, the author is attempting to ward off debris-generating anti-satellite attacks because of the damage that it causes to the space environment.[45] What if, however, an adversary attacks a satellite in a kinetic means in such a way that it does not cause debris but merely perturbs its orientation or orbital stability? The reasoning the author gives for this consideration would again, not apply and be considered a moot point.

The third consideration carries far-reaching and strategic implications by labeling attacks or interruptions on strategic satellites as highly escalatory.[46] Prohibiting attacks against strategic space assets is indeed an extremely provocative move. The United States may actually be well advised to take an open stance regarding its strategic space assets and declare which ones are off limits to attacks or else the aggressor would face a much stronger response. However, the United States must be willing to back up its rhetoric with a whole-of-government response that may include economic or diplomatic sanctions or potentially a military response.

The fourth consideration essentially attempts to declare what combatant versus non-combatant satellites would look like in a conflict.[47] This makes intuitive sense, but with the dual use nature of many on-orbit assets, it makes this consideration very difficult. The United States would need to divest itself of using commercial satellites for any military purposes. Depending how the United States reimburses commercial companies for their losses during a space conflict, space enterprises will have to weigh the considerable risk associated with supporting military conflicts against the financial gains it receives in contracting out such

[45] Colby, *From Sanctuary to Battlefield*, p.21.
[46] Colby, *From Sanctuary to Battlefield*, p.21.
[47] Colby, *From Sanctuary to Battlefield*, p.21.

support. While this is not unlike many other contract support during conflict, the global nature of the space-based enterprise offers a considerably more complex range of options for both the United States Government and the commercial entities with which it does business in space.

The fifth and final consideration offered to the United States to contemplate as it moves forward in developing its space capabilities is whether or not a space-based attack warrants a terrestrial response, and vice versa.[48] If the United States is to truly consider space as another war fighting domain in the same way it considers the land, sea, or air, it must be willing to respond both in kind, and in other domains to a space-based attack.

What all of these considerations means for the military leadership and the policy makers in Washington DC is that, until international laws and norms are established, there is a considerable gray area associated with warfare in the space domain. At a minimum, until domestic policy and laws are established to codify the code of conduct in space, America's space-minded forces are compelled to err on the side of caution. Once the laws and norms become established, the gray area within which we occupy and operate in space will shrink, marking a clear delineation between black and white, wrong and right, unlawful and lawful.

Code of Conduct on Outer Space Activities

The Code of Conduct on Outer Space Activities is still in draft, but draws from both historical treaties and laws as well as inputs from entities like the aforementioned Committee on the Peaceful Uses of Outer Space.[49]

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[48] Colby, *From Sanctuary to Battlefield*, p.21.

[49] European Union. 2014. "Code of Conduct for Outer Space Activities." March 31. Accessed January 29, 2016. http://www.eeas.europa.eu/non-proliferation-and-disarmament/pdf/space_code_conduct_draft_vers_31-march-2014_en.pdf.

It is a comprehensive agreement being worked by the European Union through the United Nations and is one that the United States has endorsed through its own National Security Strategy.

> As countries increasingly derive benefits from space, we must join together to deal with threats posed by those who may wish to deny the peaceful use of outer space. We are expanding our international space cooperation activities in all sectors, promoting transparency and confidence-building measures such as an International Code of Conduct on Outer Space Activities, and expanding partnerships with the private sector in support of missions and capabilities previously claimed by governments alone.[50]

The Space Code of Conduct, in draft as of 31 March, 2014, is comprised of four sections. The first, entitled *Purpose, Scope, and General Principles*, provides an overview of the agreement and broadly speak to the aims of maintaining space as a peaceful domain in order to pursue scientific endeavors, exploration, and technological development.[51] Unfortunately, the code is self-limiting, acknowledging that it is not legally binding and is "without prejudice to international and national law." This is unfortunate because the spacefaring nations of the world do not need another non-binding code. Rather, they must be working towards more binding measures to codify the acceptable uses and operations in space. To the credit of this code, it does offer up that its signatories reaffirm their compliance with existing international laws and norms.[52] For the United States Air Force, the 2013 Policy Directive does exactly this and mandates that space activities are conducted "in a manner consistent with international law, treaties, and non-legally binding agreements such as

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[50] The White House. 2015. "National Security Strategy." May 6. Accessed January 29, 2016. https://www.whitehouse.gov/sites/default/files/docs/2015_national_security_strategy.pdf, p. 13.
[51] European Union, Code of Conduct for Outer Space Activities, p. 3-6.
[52] European Union, Code of Conduct for Outer Space Activities, p. 2.

norms, codes of conduct or other such instruments in which the US participates."[53] In doing so, the code lists the existing signatories and highlights a key notion in this study-the existing international laws and norms are outdated and lacking in scope and specificity. Nonetheless, it will be a step forward if it becomes agreed upon by the majority of the spacefaring nations of the world.

Section two is labeled *Safety, Security, and Sustainability of Outer Space Activities*. This section is heavily focused on the limitation of orbital debris. In all phases of space operations, nations need to minimize the generation of debris including launch, on-orbit operations, and disposal.[54] This section also prohibits any permanent damage or destruction unless human life or health is at risk, to minimize debris generation, or to exercise the right of self-defense as outlined in the United Nations Charter.[55] This section lacks much needed specificity, not an uncommon problem in this code. However, the heavy focus on debris mitigation is very telling. It is clearly a major concern for the European Union and should be for all spacefaring nations of the world. The code does allow for destruction of satellites for the sake of preserving human life or health. Interestingly, as humankind increases its dependence on space, the likelihood increases that taking aggression against a satellite will, in fact, lead to actual harm of human beings. If adopted as an international law or norm, a provision like this provides a legal framework that reduces, but does not eliminate an escalation to war in space.

The third section, *Cooperation Mechanisms*, stresses cooperation through transparency.[56] Cooperation can take on many forms and this

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[53] United States Air Force. 2013. "Air Force e-Publishing." August 13. Accessed April 6, 2016. http://static.e-publishing.af.mil/production/1/saf_sp/publication/afpd13-6/afpd13-6.pdf, p. 6.
[54] European Union, Code of Conduct for Outer Space Activities, p. 6-7.
[55] European Union, Code of Conduct for Outer Space Activities, p. 6.
[56] European Union, Code of Conduct for Outer Space Activities, p. 7-11.

code seems to capture many of them with respect to space operations. In keeping with the theme of minimizing orbital debris, the code advocates that nations take special care in conducting orbital maneuvers and in sharing any conjunction information needed to prevent orbital collisions. The code also requests that states share space environmental information.[57] Collectively, the spacefaring nations of the world would benefit greatly from a collaborative effort to forecast and report significant space weather events that may impact orbital assets. To mitigate technological transfer concerns, the code does allow nations the discretion regarding what types of information will be shared by the states party to the code. The fourth section of the code, *Organisational Aspects*, covers the manner in which the signatories will meet to discuss and amend the code.

In all, this code of conduct takes the spacefaring nations of the world a long way from the limited and vague guidance of the Outer Space Treaty of 1967. However, there is still much work to do. International laws and norms must have the specificity needed to bound space operations in a way that provides the nations of the world the guidance and restrictions needed. The Code of Conduct in draft at the European Union does not delineate actions that are permissible or prohibited against assets that are on orbit, be it kinetic or non-kinetic. From the language in the code, it would seem as though any non-permanent action is allowed so long as it does not increase the amount of debris on orbit. Even that, it would seem, is permissible if a nation can prove that it was done to save the life or health of a human.

[57] European Union, Code of Conduct for Outer Space Activities, p. 9.

Chapter 3 Summary

The international community needs to establish laws and norms that are enforced on all nations, spacefaring or otherwise. These laws and norms will promote cooperation among states to enable economic development, scientific research, and exploration. These laws will provide the spacefaring nations the right and left bounds within which they must conduct their operations, be it peaceful or otherwise. In the context of the establishment of an independent Space Force in the United States, these laws and norms provide the foundation upon which domestic space policy and military strategy can be built. Without them, as the leading spacefaring nation of the world, the United States will continue to err on the side of caution, potentially limiting our use of space. Also without these international laws and norms, the belligerent nations of the world will continue to take advantage of the lawlessness and pursue increasingly dangerous courses of action.

This study has examined portions of existing laws and norms in the Outer Space Treaty of 1967, various academic works by Washington think tanks, current work accomplished through international organizations like the United Nations, and those of supranational organizations like the European Union. Common themes like a devotion to the peaceful use of space for science and exploration, transparency of operations, and orbital debris mitigation are good starting points but they do little to address the contested nature of the space domain. Much more is needed from the international community, perhaps led by the United States, to establish a law of armed conflict for space, not just a code of conduct.

Chapter 4

Space Force Construct and Composition

This study has thus far been concerned with the contextual factors that must exist in order to give rise to an independent Space Force. However, the notion that it is a distinct branch of our armed forces within the Department of Defense is not necessarily a forgone conclusion. It could be that the nation establishes this independent space service in one of many possible constructs, composed of innumerable different types of personnel. So for the purposes of this chapter, the construct is defined as the form that the space service takes on and the composition is defined as the personnel makeup of the organization. Four constructs considered in this study include a semi-autonomous Space Corps contained within the Air Force, a Space Guard which would serve as a distinct body within the Department of Homeland Security, a Department of Space which would be on level playing field with all other departments of government, and of course, an independent Space Force as an independent branch within the Department of Defense.

Comprehensive analyses have recently been conducted that explore both the functional and fiscal considerations of the various ways in which a separate space service could come into being.[1] To reiterate, this study is not intended to solve the issue of construct and composition for a new space service. Rather, it has set out to explore the contextual factors that would give rise to it. Therefore, the discussion on the construct and composition is not meant to be an in-depth analysis on the topic, but merely an introduction to it and a recommendation on possible areas for future research.

[1] Stover, Luke R., and Alan Johnson. 2014. "Space Separatism: Degree of Differentiation." *Air and Space Power Journal*, p. 17-37.

Semi-Autonomous Space Corps

For a semi-autonomous Space Corps to exist within the confines of the United States Air Force, a logical precondition would need to be met. The Space Corps would need to support air operations primarily while relying on the Air Force for various logistical and administrative support. It would still operate in the Joint environment, as do all branches of the military, but would be chartered as a Space Corps within the Air Force, to support the air as its primary focus. This has been the case with the creation of the United States Marine Corps and its relationship with the Navy. More recently, this was the case with the Army Air Corps and its supporting role with the United States Army in which it was contained. Even though the Marine Corps operates in additional domains, it is functionally aligned with the Navy in an exclusive relationship that space cannot have with air alone.

Furthermore, there have been justifications for space remaining in the Air Force because air and space were, at one point in time, seen as the same domain. These advocates against space separation from the Air Force clung to that notion since the beginning of the Air Force itself.[2] However, that rationale died on October 16, 2001 when the Chief of Staff of the Air Force, General John P. Jumper, announced that the term "aerospace" will no longer be used and that "air and space" is how we need to think, speak, and act as a service. He viewed that the role of the Air Force was to embrace the differences between air and space and grow the culture that "shows the same expertise in space as Airmen showed after World War II in aerial combat."[3] His allusion to Airmen in the period of time after World War II echoes the inevitability of a United States Space Force, indicating that it was the Air Force's role to "grow that culture until

[2] Lambeth, *Mastering the Ultimate High Ground,* p. 37-59.
[3] Lambeth, *Mastering the Ultimate High Ground,* p. 90-91.

it matures." After it matures, then what? The answer most likely will be found by looking at what happened when the Army grew a culture of Airmen until they matured, until 1947.

One could argue that a semi-autonomous Space Corps already exists today in the relationship between Air Force Space Command and the United States Air Force at large. This is not the type of relationship that exists between the Marines and the Navy today. Rather, this relationship is more analogous to the one that existed between the Army Air Forces and the United States Army, established by the War Department in March of 1942. "What the limited autonomy did bring was a unity of command over air forces, regular consultation with the air force commander in the highest political and military circles, and the creation of a separate air staff."[4] From this limited autonomy, the infrastructure already existed, the leadership already developed, and the professional relationships already formed to enable the rise of an independent service just five years later.

With the semi-autonomous command that Air Force Space Command has over the USAF space assets and the regular consultation between Air Force Space Command in Colorado Springs and the Air Staff in Washington DC, one could argue that the same type of relationship that existed between the Army Air Forces and the US Army, exists today between Air Force Space Command and the US Air Force. One of the many distinctions that should be noted is with the Army Air Corps and Army Air Force, promotions were handled within the service, not rolled up to the US Army level. Today, promotions for Air Force Space Command personnel are decided by a single board at the Air Force level. For the United States to adopt the model of an independence Space Corps, promotions are one

[4] Overy, Richard J. 1980. *The Air War: 1939-1945.* Washington D.C.: Potomac Books, Inc., p. 132.

of many aspects of the system that would gain additional autonomy from the Air Force.

Additionally, the analogy between the Marine Corps and its relationship with the United States Navy breaks down with respect to the function that it provides as the "rapid-deployment of forces in support of naval operations and relies on the Navy to provide all of the logistics and administrative support."[5] Because the Marine Corps is so heavily integrated with and dependent on the Navy, it would be safe to assume that this could not and should not ever evolve into a completely separate branch of service. With the case of space, a Space Corps contained within the United States Air Force would not necessarily serve as a rapid-deployment force exclusively supporting Air Force operations. In fact, Air Force Space Command does not do this today either. Rather, space provides capabilities in coordination with all three branches of the military and does not necessarily need to rely on any single branch for logistical or administrative support. Simply put, the idea of a Space Corps inside the United States Air Force does not intuitively make sense from a functional standpoint because space is not a supporting function for air operations alone and when the preconditions give rise to the Space Force autonomy debate, the role of space will not be subservient to any branch of service, including the Air Force.

United States Space Guard

If the United States were to establish its own Space Guard, it would seem logical that it would fall under the purview of the Department of Homeland Security, the same as the Coast Guard. Even this may not be an automatic assignment however because of the global nature of space assets and the enmeshment with America's economic core. Other possible

[5] Lambeth, *Mastering the Ultimate High Ground,* p. 69.

homes for a newly formed Space Guard would be in the Departments of Treasury, Commerce, or Transportation, which were previous departments of the United States Government in which the Coast Guard resided.[6] However, none of these fully addresses every aspect in which we occupy space and with the growing congestion and contestation in space, it would seem most logical for a Space Guard to be reporting to the Director of Homeland Security. Several questions remain however, especially regarding the roles and responsibilities and the composition. If we were to establish a Space Guard, what authorities would it possess and are those authorities principally centered on defense of the national space infrastructure or would they carry with them any offensive capacity? Would the Space Guard be able to act in concert with the Department of Defense in executing a wartime mission? This study addresses these two questions and ultimately has to conclude that a significant division of labor between the Department of Homeland Security and Department of Defense is the only way that this construct could make sense in peace time and in war.

Should the United States establish its own Space Guard, the peacetime mission would ensure that the interests of the United States are protected in space. Its missions would be similar in nature to the United States Coast Guard. The Coast Guard performs eleven missions on a routine basis, most notably, port security, marine safety, search and rescue, environmental protection, and law enforcement. Of course, the Coast Guard is still a military service and branch of the armed forces under Title 14 of the United States Code and can be activated under the Navy by the President during a time of war.[7]

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[6] United States Coast Guard. 2016. *Coast Guard History.* January 12. Accessed March 26, 2016. http://www.uscg.mil/history/faqs/when.asp.
[7] United States Coast Guard. 2016. *Coast Guard Missions.* January 12. Accessed March 26, 2016. http://www.uscg.mil/history/MissionsIndex.asp

A newly formed Space Guard could have analogous roles for the United States, ensuring security of our space capabilities in various orbits or even space ports on Earth. As civilian space travel becomes more of a mainstream way to traverse, the need for security at these space ports may fall under the purview of the Space Guard. Search and rescue and space safety may also fall under the Space Guard. Today, this falls almost squarely on the shoulders of NASA and the FAA. However, as space becomes more commercialized, the civilians occupying space will need governmental support that exceeds the capacity and responsibilities of NASA and the FAA. The United States Coast Guard serves as a law enforcement arm at sea, performing duties anywhere from counter-drug operations to anti-piracy. The United States Space Guard may have a similar function in countering the efforts of "space piracy" which may take on the form of hijacking satellites, jamming of commercial satellite signals, or terrestrial interference with the link between ground and space assets. While this seems to make analogous sense, there exists a great potential for duplication of effort between the Department of Homeland Security and Department of Defense under this construct. Many of the same services that would be needed for a Space Guard to provide these types of missions for the civilian use of space would also be needed by the Department of Defense. Despite being able to activate the Space Guard under the Air Force if needed during war, this duplication of effort and materiel would be an inefficient construct.

Recall that for the United States to be open to establishing an independent space service, this study contends that space capabilities must have first been proven as a decisive factor in war. Thus, the likelihood that contests in space traverse commercial and military jurisdictions creates the need to have an independent service that can support commercial and military interests more fluidly than a Space Guard construct would allow. Furthermore, regulation of the commercialized space industry could be accomplished via the Department

of Commerce and the Department of Transportation without the need to establish a new independent service. Finally, the potential need for offensive capacity in space creates a complication for a Space Guard. What offensive capacity would be allowed under Title 14 and what, if any, Title 10 capacity would be missing if our nation's space capabilities were housed in a Space Guard? Any answer to this question would be speculation at the present but the notion itself suggests that the nation would be best served with a robust military capability serving in the Department of Defense.

Department of Space

Creating a new department in the United States Government is no small feat. In response to the September 11, 2001 terrorist attacks, the United States established the Department of Homeland Security to secure the nation's borders and safeguard it against terrorism.[8] Many space security "hawks" in the United States Government warn against a "Space Pearl Harbor" that could cripple the United States and its space capabilities in one attack.[9] Should something of this nature occur, the United States could find itself establishing a new department of government charged with safeguarding the whole of our space-based equities. As with the notion of a Space Guard, there are some roles and responsibilities that would still need to be delineated from those of the Department of Defense, Department of Commerce, and Department of Transportation.

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[8] Department of Homeland Security. 2015. *Mission.* July 13. Accessed March 26, 2016. https://www.dhs.gov/mission.

[9] Commission to Assess United States National Security Space Management and Organization. 2001. "Report of the Commission to Assess United States National Security Space Management and Organization." Washington D.C., p. 8-9, 13; Hays, *Space and Security,* p. 86-87.

A Department of Space would be the most grandiose of possible constructs of an independent space service. This element of the United States Government would have responsibility over the regulation of space-based commerce, transportation, and security. However, this level of robustness would most likely cost taxpayers far more than an independent branch of the military and would likely struggle with the integration of its efforts with the existing departments of the United States Government. Regulation over civilian space travel and commercial transport of goods and services could still be provided through the Department of Commerce, Department of Transportation, or even the Department of Energy if the nation develops a space-based solar power industry. A Department of Space would not be needed to regulate any of these industries as all of this could be done within the existing government construct.

Finally, the Department of Space would need to deconflict its role in safeguarding space-based equities with the Department of Defense. As was the case in the notional Space Guard construct, the increased likelihood of a conflict in space is not mitigated, nor addressed, by establishing a Department of Space within the United States Government. The defense of military assets and the offense executed by military assets will always remain with the Department of Defense and that charge will not change with the establishment of a Department of Space. Thus, as the United States moves forward with developing its space-based capacity, the need to defend our space assets or prosecute war in and through space is a need that is not effectively or efficiently addressed through an independent Department of Space. Rather, the answer to this need is most likely to be found in a separate branch within the Department of Defense, a United States Space Force.

United States Space Force

This study has alluded to an independent Space Force throughout. The reason is simple—this is the most effective and efficient way for the United States Government to address the growing need to protect our space-based equities and ensure national security objectives are met in and through space. The way the Air Force has developed the nation's space capabilities has been widely successful and critical to the US national security posture. The Air Force is responsible for ensuring that the United States is the leading spacefaring nation in the world and has thus far not once faltered in this monumental task. The Air Force will continue to embrace this responsibility in the near future. Eventually, there will exist a tipping point at which the nation will need to decide whether the Air Force grows in both air and space capacity or if it will be divested of a preponderance of its space equities in order to resume its focus on the air. At this point, the establishment of a United States Space Force would assume the role as the Department of Defense Executive Agent for Space and continue the world-leading pace of space capability development that the Air Force has set the United States on and maintained for the last six decades.

Air Force Space Command already organizes, trains, and equips a preponderance of the United States space forces. It does not, however, have its own Congressionally allocated budget and must work within the Air Force regarding budgeting and personnel issues to include recruitment, force development, promotions, and acquisitions. Again, the Air Force has not faltered in developing space through the leadership of Air Force Space Command. This study recognizes that the many successes enjoyed by the Department of Defense are directly attributed to the way in which Air Force Space Command has organized, trained, and equipped its forces. Nonetheless, if the nation decides to move forward with the establishment of an independent branch of service in the

Department of Defense, it will start with the cleaving of Air Force Space Command away from the Air Force.

The new branch of service will more than likely be able to take advantage of the infrastructure in place throughout the country, including the headquarters in Colorado Springs and the many installations occupied by space units. Many of these installations would become Joint bases as the newly formed Space Force coexists with its Defense Department cohorts. The roles and responsibilities of the Space Force would expand to protect the increasingly critical space equities and project the nation's power through and into space. When the nation establishes its Space Force, not all space capabilities would go with it. Each of the space capabilities that are organic to the other branches of services would remain with their respective branches. Specific space capabilities like communication satellites that exclusively support sea or land operations would remain with the Navy and Army, respectively. Space assets that support the Air Force may remain with the Air Force. However, the core elements of the national space enterprise and those that support all branches of the Department of Defense would transition to the Space Force including missile warning, offensive and defensive space control, space situational awareness, strategic communications, position, navigation, and timing, and space launch.

This newly formed branch of the nation's armed forces will likely have its own unique challenges as it integrates with the other branches of the Department of Defense. Formalizing its own doctrine and strategies will be the work of operators and scholars alike. If the preconditions in this study are met however, the nation will most surely need a branch of service dedicated to its mastery of space. If the United States space arm has already proven to be a decisive factor in a war-tested environment, if space has been woven into the fabric of American society, and if the United States and the international community has an agreed upon set of laws and norms that govern our use of space, then the nation will be ready for

the decision of whether or not to establish a Space Force as our next branch of the Department of Defense.

Chapter 4 Summary

This chapter reviews the four possible constructs that a new space service could adopt. Of these, an independent branch of the Department of Defense, a Space Force, is the most effective and efficient means of doing so. A Space Corps, contained within the Air Force may actually be the most likely first step towards this end but it should not be an end in and of itself. A semi-autonomous Space Corps within the Air Force may be an incremental step to an independent Space Force but functionally, it does not align with why a semi-autonomous corps is established in our armed forces. Currently, space does provide support but it is not exclusive to the air. Its global nature should be an indication that it is worthy of more than a semi-autonomous corps inside any single branch of the Department of Defense. Another form that a separate space service could take would be to establish a Space Guard. However, the role that the Coast Guard plays in securing our maritime borders and ensuring safety and rescue operations at sea, is not the right analogy for what we would need in space. Many of these functions are required but the primary focus should be on Title 10 responsibilities. The last option considered is a Department of Space which would be too big, costly, and cumbersome to accomplish the specific roles required by the expanding space interests of the United States. Thus, the nation should seek to establish an independent Space Force, under the Department of Defense, when the preconditions are met and there exists the political will and military necessity to do so.

Chapter 5

Conclusion

> *In the long haul, our safety as a nation may depend upon our achieving 'space superiority.' Several decades from now, the important battles may not be sea battles or air battles, but space battles, and we should be spending a certain fraction of our national resources to ensure that we do not lag in obtaining space supremacy. Besides the direct military importance of space, our prestige as world leaders might well dictate that we undertake lunar expeditions and even interplanetary flight when the appropriate technological advances have been made and the time is ripe.* [1]
>
> -General Bernard Schriever
> Commander, Air Force Systems Command, February 19, 1957

When he was named the first commander of Air Force Systems Command and before the first satellites were ever placed on orbit, General Bernard Schriever predicted the importance of space for both military and civilian goals. His wisdom and prescient thinking served to develop the military arm of space when the nation needed it. The genesis of the United States Space Force will occur along a similar path of gradual autonomy as the Air Force did when it slowly, but surely, separated from its Army origins. Mechanically, it will take an act of Congress, endorsed by the Commander-in-Chief. Before that occurs however, several contextual elements must come to fruition.

First, the population of the United States will have to recognize the importance of space, not just for military operations, but for the continuation of life as we know it. During the interwar period, it was Billy Mitchell who served as a mouthpiece for the independence of our air arm. It was his public defiance of the establishment that brought increasing

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[1] United States Air Force. 2007. "50th Space Wing Public Affairs." *Gen. Schriever's Visionary Space Speech Turns 50.* February 13. Accessed March 26, 2016. http://www.schriever.af.mil/news/story.asp?id=123040817.

attention to the population about the importance of the United States' mastery of the air. Space does not necessarily need its own "Billy Mitchell" bucking the status quo but it will need a catalyst to show to the public just how important it has become. Presently, space has not woven itself into the conscious fabric of the American way of life thoroughly enough for this to occur.

Second, when a preponderance of our civilian space travel, commercial transit, and military transportation flows through space, the public, military, and government leadership will increasingly recognize the need to protect the domain upon which they will have become so dependent. Presently, the commercial space travel and tourism industry is in its infancy. It is following a similar path as that of the aviation industry in the 1920s, but there is still a long way to go before it is considered a mainstay in the way America travels. Additionally, the economy of the United States will need to rely on space for a preponderance of its strength. In this regard, a precondition is closest to being met in order for the establishment of an independent Space Force. With the way the nation, and the rest of the world for that matter, relies on the Global Positioning System for its navigation and timing signals, there is hardly a single major corporation that does not in some way depend on this facet of space. Further, satellite communication carries information around the world at light speed, another space-forged bond holding the domestic and international economy together.

Yet another precondition that must be met prior to being able to move towards an independent Space Force is the need to prove its worth in and through conflict. Be it hot or cold, the United States space capabilities will likely need to prove their military worth in a similar manner that the Army Air Forces did during World War II. Naturally, it will not necessarily take conflict as wide spread or as horrific as a world war for this to occur. However, in some decisive manner, space will need to assert itself as a capability without which the United States would not

be able to fight and win effectively. It is important to reiterate that this study is in no way advocating such a conflict and acknowledges that it may not even need to take place as a "hot war." Regardless, it will be through an actual demonstration, not speculation, that the country will be ready to make a serious decision about the organization of its armed forces.

Finally, the United States should lead the other spacefaring nations of the world to develop international laws and norms that will guide, and restrict where needed, the actions of developing and developed spacefaring nations. The international community must come to a consensus regarding the issue of weaponizing space. They must acknowledge the infeasibility of banning all weapons in space and should focus on banning those weapons that would generate irreversible debris clouds that would ruin the space environment for everyone. On the topic of orbital debris, the international community must establish more stringent regulations regarding the generation of orbital debris and must mandate a nation's compliance with these regulations instead of offering the regulations up to voluntary compliance. These international laws and norms must be specific enough for the United States military to understand the restrictions that would govern their actions in space. In a sense, these restrictions will have an empowering effect because the United States, and all other spacefaring nations, will know exactly what they can and cannot do with respect to their military operations in space. Their bounds will be grounded in actual laws and norms, not speculative restraint influenced by domestic and international politics.

The regulations must also protect the commercialization of space to incentivize economic expansion into space. Current measures that mandate sharing of economic endeavors on the moon or other celestial bodies have reduced the incentives for corporations to mine resources that could be used for economic development on Earth and in space. As it pertains to this study, international laws and norms that encourage the

commercialization of space will deepen the entanglement that the space domain has with American society. As this relationship deepens to a point where space is a tangible component of nearly every American's life, international laws and norms will have had the same effect on the United States space industry that they had for its air industry in the 1920s and 1930s. Thus, the international community must recognize that the abundant resources of outer space must not be considered common goods and should be recognized in the same manner as on Earth.

This study has examined the historic contextual elements that were present before and during the establishment of the United States Air Force. It acknowledges that these contextual elements cannot be applied blindly to the world of today. Nor does this thesis lay claim that the exact same conditions must be met for space in order for the United States to establish a Space Force. However, the decision will ultimately be one that takes place on the national stage among our democratically elected civilian leadership and the military leaders that advise them.

This study has shown that at the present, the nation is not ready to entertain such a decision. The contextual foundation upon which such a decision should be made is not yet present. This study contends that this decision will eventually be made, but not before each of the contextual elements highlighted in this thesis are present. At that time, the leadership of our democratically elected government and our military service members, will have all of the evidence they need to support a decision that formalizes what will have already been adopted in practice—that this nation is a leader among others in this world and it has expanded its armed forces to be prepared for a fight on land, at sea, in the air, and in space.

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Appendix I: The Outer Space Treaty of 1967

A review of the Outer Space Treaty reveals two central themes. First, the Outer Space Treaty was necessary to place some limits on the actions of two superpowers that, at the time, held the world hostage in fear of a thermonuclear exchange. Second, the Outer Space Treaty needs to be updated to reflect both the reality of the militarization of space today and the technology development that has enabled much of this militarization. Article I of the treaty discusses the limitations, or outright ban, on any one nation claiming rights to the moon or other celestial bodies.[1] Article I sets the tone for the entire treaty by declaring the freedom for any nation to conduct exploration and scientific investigation of outer space in its entirety, including the moon and other celestial objects. Article II demands more specifically, that nations of Earth cannot make any sovereignty claims of the moon and other celestial bodies. This clearly establishes the notion that in terms of other-than-Earth territory, any endeavors to occupy the surface of a non-Earth body must be done in the spirit of exploration and cooperation with other nations. Principally, this prohibits nations from making a claim over territory that could ultimately lead to war on Earth or elsewhere.

Article III adds that the actions of the signatories of this treaty comply with international regulations, including specifically the Charter of the United Nations. Notably, this part of the treaty seeks to further the jurisdiction of the international system beyond the surface of the Earth and its atmosphere. To further clarify the peaceful intent behind humankind's occupation of space, Article IV discusses the limitations on the weaponry that can be placed on orbit or otherwise in outer space,

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[1] Reynolds, Glenn H., and Robert P. Merges. 1997. *Outer Space: Problems of Law and Policy, 2nd Edition.* Boulder: Westview Press, p. 63-68. Unless otherwise noted, this source is used for all referencces to the specific verbiage contained in the Outer Space Treaty of 1967.

banning the use of any nuclear weapon or other weapons of mass destruction. The most striking omission here is the fact that Article IV allows for some types of weaponry to be placed on orbit and while it prohibits military fortifications on the moon or other celestial objects, it allows for facilities and even military personnel so long as they are used for scientific or peaceful purposes.

Understandably, the creators and signatories of this treaty intended to establish outer space as a peaceful place where international cooperation and exploration were the themes of occupation. However, as orbits around Earth have become increasingly congested, orbital space has become increasingly limited. Furthermore, the peaceful nature of space seems to be a partial fallacy with the use of military satellites that aid in the prosecution of wars on Earth. Is it possible that the spirit and intent of the Outer Space Treaty has already been overcome by events? Another consideration of Articles I-IV is how feasible it was at the time they were written to verify compliance with any of these restrictions. Is it possible that such restrictions were readily agreed to because their compliance was extremely difficult to verify? With so many technologies today having a dual-use nature, seemingly innocuous scientific endeavors may have military applications with very few modifications. At what point is a scientific facility on the moon, manned by a military member, conducting experiments no longer an exploration venture with peaceful purposes, having become a military base conducting defense research and design? These nuances may be discussed in Articles I-IV but verification of compliance with these measures is much more realistic with today's technology. Going forward, international norms and regulations must specify the degree to which militarization of space is permissible and through what formal mechanism may the international community verify compliance.

In Articles V-IX, the conduct of state parties to the Treaty are discussed with respect to treatment of astronauts and objects placed on

orbit or celestial bodies. The Outer Space Treaty specifically mentions governmental and non-governmental agencies as actors governed by the treaty and holds state parties responsible for the activities of both types of agencies. The Treaty goes so far as to state that state parties to the Treaty must accept liability for anything launched from within their territory, either governmental or non-governmental. With the increased globalization in the world, corporations are not necessarily tied to any one specific nation so the lines between state sovereignty and multinational corporation are beginning to blur. Are such stipulations in the Outer Space Treaty enforceable against multinational corporations? Is it even possible for any international jurisdiction to apply ownership of an object placed on orbit by a multinational corporation to a single state party to the treaty?

International norms and regulations must be updated to reflect increased globalization and must be prepared to levy space law against multinational corporations and state parties alike. However, just as corporations cannot occupy their own sovereign land, ports, or airspace, they should not be allowed to establish territory on celestial bodies or even orbital slots in space around Earth. These distinctions must be made within international norms and regulations prior to launching any such endeavors that would result in the occupation of territory on celestial objects or within orbital slots around Earth.

Article X of the Outer Space Treaty seeks to promote cooperation among States Party to the Treaty by allowing states to observe the flight of space objects launched by other states. This well-intentioned article assumes too much equality between the space capabilities of states and is overly optimistic in the notion that states would agree to afford opportunities of observation for object flights. With the increased militarization of space, agreements to afford opportunities of observation should realistically be replaced by state-sponsored space situational awareness efforts. Modern norms and regulations would be more

applicable if they specified the manner in which space situational awareness could be obtained and restricted such activities only to prevent interference with other spacefaring nations' peaceful activities.

Finally, Articles XI-XIII focus on promoting international cooperation through information sharing, reciprocity regarding the use of structures, equipment, and vehicles in space, and some guidance regarding the conduct of international inter-governmental organizations in exploration.[2] In future space militarization, States Party to the Treaty will need additional norms and regulations regarding information sharing and reciprocity as it pertains to military endeavors. With the dual-use nature of space capabilities (scientific research vs. national defense), this information sharing and reciprocity will become less applicable and more realistic and specific norms and regulations must be in place to promote a civilized militarization of space.

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[2] Articles XIV-XVII are focused primarily with the mechanics of adding or subtracting signatories, amending the treaty, and archiving the agreement. These will not be reviewed as a part of this thesis as their content is outside the scope of this study.